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Railway Age Gazette

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The Employees Now Speak for Themselves

Among the great body of railway employees—the more than 80 per cent not included in the four brotherhoods of trainmen who are threatening to tie up all railway operation by striking—there will be found only the heartiest approval of the movement in their behalf of which an account of the inception is given elsewhere. There is one reason for regret and that is that the movement was not inaugurated some weeks ago. The sentiment among those whose rights are not only not being cared for, but are being seriously infringed by the brotherhood demands, was the same then as that which will be expressed in the overwhelming mass of signatures which will be presented to Congress as soon as they can be put on paper. But a leader was needed to crystallize sentiment into action. He has appeared and the action is proceeding. Whether these signatures reach Congress in time to accomplish their purpose or not, or whether in any event they make any impression upon our case-hardened legislators, is a matter of conjecture. In any event, this accumulation of thousands of signatures expressive of disapproval of the roughshod selfishness of the few powerful brotherhoods, will make an impression upon the public mind. It will go far to correct the widely prevalent view of the public that railway employees are a unit in the attempt to wreck the incipient and perhaps only temporary prosperity of the railways.

Graciousness in the Train Service

Rule 708, in the new train-rule code of the Western Pacific, tells the employees that they should "cultivate a graciousness of manner; not only in dealing with the public, but also with fellow employees." Graciousness implies a high degree of refinement. American railroad officers have been trying to inculcate politeness and courtesy for years, and with special emphasis during the past few years; but it is perhaps appropriate that a new rule book, issued by our newest railroad should set a new and higher standard. According to the dictionaries, a gracious person is one "full of grace or favor: disposed to exercise favor or kindness; beneficent; benignant." Cynical persons will say that American passenger-service standards are already much higher—on paper—than the employees can measure up to; but it is only a question of enforcement, after all. Neglect or non-enforcement of rules, or unsatisfactory quality of the men, is no reason for not having the best possible rules. Why should not every road, everywhere, emulate the Western Pacific? Do we not always inwardly commend the man, of any class, who is seen to be notably successful in dealing with a grouchy or an ignorant passenger? It is a plain duty to imitate the polite and affable ticket-seller or trainman. Telling men to keep their temper when a passenger gets angry or abusive is one of the commonest injunctions; and they are expected to heed it. The lesson of this rule is in the same field. And the rule must be treated as though addressed to the trainmasters. Howsoever well-intentioned the employees may be, the cultivating process is not likely to produce any great degree of satisfaction in the general manager's office unless there is "intensive" cultivation, such as is applied to apples in Idaho; and the trainmaster is the man who must do this.

New York Central Operators' Big Pay

The settlement of the New York Central telegraphers' wages by the arbitrators, reported last week, page 203, is correct in principle, but very unsatisfactory in its application. The officers of the brotherhood may well laud the virtues of arbitration, when they have succeeded in getting the single neutral arbitrator to grant their constituents at a single stroke an increase of wages of over 20 per cent. The trainmen oppose arbitration because of the impossibility of finding outsiders who can appreciate railroad details. Here is an equally serious objection; everybody should oppose leaving important issues to a single individual, as was done in this case. It is getting too far away from the fundamental idea of a jury. The single-judge idea is intolerable in matters which come so near men's hearts as their daily wages. The nominal shortening of the month is the salient feature of this decision. The 26-day month is right and the 31-day month is wrong, and this change to the shorter month will be heralded as a great thing in promoting the health and the moral and spiritual welfare of the telegraphers, but as a matter of fact they—or 99 per cent of them—will simply go on working Sunday, as before, only getting double pay for the time thus

worked. The real problem, that of giving the men the greatest practicable variety in their lives, consistent with economical service, remains unsolved, untouched. But the movement is now started, and it will not be long before we may expect the next step. The Central's lines west of Buffalo are now added to those of the Michigan Central and the Grand Trunk as giving liberal time off, and the New York Central operators east of Buffalo will, no doubt, be the next to apply. Probably they are now kicking themselves for not asking double Sunday pay this time. The trade unions have already secured considerable modifications of the 365-day work year in numerous industries, and the influence of what they have accomplished is pretty sure to affect the railway station service. Railroad managers have a duty to see that the problem is settled on rational grounds.

WAGE CONTROVERSY REFERRED TO MEDIATION

THE attitudes assumed by both the representatives of the railways and the representatives of the train service employees at the conferences in New York this week were entirely consistent with the attitudes assumed by them before the strike vote was taken. The report of the vote showed that, as is always the case, the members of the brotherhoods had voted almost unanimously to authorize their leaders to call a strike if they considered this expedient. The National Conference Committee of the Railways, after hearing the strike vote, stated that, in its opinion, there was no probability of a settlement being reached by further direct negotiations, and asked the representatives of the employees to join with the conference committee in asking for mediation by the federal mediation board. The representatives of the employees refused to join with the railway's committee in making this move. The railways then alone asked for mediation.

The record to date, then, is as follows: The railways have asked the employees to join them in requesting an investigation of the merits of the controversy by the Interstate Commerce Commission, and this the employees have refused. The railways have suggested arbitration under the Newlands act, and this the employees have refused. Having rejected both of these propositions, the employees have taken a strike vote. Then the railways have suggested a joint request for mediation, and this the employees have refused.

In other words, the railways have, up to this time, made every move which has been made in the direction of a peaceful settlement of the controversy; and the employees have just as consistently refused to make any move except in the direction of a strike, with all its direful consequences.

In view of these facts, it is plain that if there is a strike the responsibility for it and its results will rest entirely on the employees. If, on the other hand, there is finally arbitration, the concessions the railways have made in the interest of peace should help them in securing a fair basis for arbitration and a fair method of conducting it. The fair basis, of course, would be one providing for the full consideration of the demands of both sides. The fairest method would be that of full investigation by the body that fixes the rates from which wages must be paid—the Interstate Commerce Commission.

While the employees refused to join in asking for mediation, they accepted it when tendered by the federal board. Both the railways and the employees can make any proposals to the board and through it to each other that they see fit. It may be assumed that the railway committee will present with great force their reasons for desiring that the entire controversy shall be submitted to the Interstate Commerce Commission, the only tribunal that is qualified to give due consideration to all of the important interests involved.

THE MAIL-PAY SETTLEMENT

CONGRESS has decided at last to abandon the archaic theory of fixing the railway mail-pay rates in the annual appropriation bills—a theory which involves a strenuous contest almost every year in the Senate or the House, or in the committees—and has also put a stop, at least temporarily, to the absurd and ill-judged activities of the Post Office department, in cutting down the railways' pay, which have disgraced that department for several years back; two steps in real progress which will elicit from railway officers everywhere an audible sigh of relief. The bill, by which the whole question of rates for transportation of mail by railroad is referred to the Interstate Commerce Commission, is abstracted in another column.

The bill also recognizes the injustice of paying the railways for carrying the mails, including the parcels, on the basis of weights estimated before the parcel post was started; but in very meagre fashion. These are concessions in form without any substance. The railroads on which the parcels have not increased the loads of the mail-cars many times one per cent must be few indeed.

This legislation should become the beginning of a great reform; it will introduce a rational procedure in place of what is about the crudest scheme that was ever thought of. And it is safe to characterize the change as a reform, notwithstanding its deficiencies. The Interstate Commerce Commission, judging from the past, will take many months to study its problem; and, judging again by the past, will pare down the profits of the railways to the lowest basis that could be considered reasonable; but there is no better way. As to the extent to which the injustices of the past will have been cured, everybody must continue in the dark until the Commission decides whether or not to adopt the space-rate rule; for if that rule is used the railways' rights and interests will be subject to the mistakes of judgment and the prejudices of the officers of the post office department, more completely even than now. To secure the prompt service which the public demands, the government, paying for space, would often have to engage more than could be used; but the figures representing money paid for empty space would be always before the mail-service superintendent as indicating a potential waste; and the incentive to scrimp in order to neutralize that expenditure would be a constant detriment to efficient service. The impossible features of the space-rate theory must have been presented very forcefully to Congress; otherwise we should not have been favored with even this conditional check upon it.

However, it is sufficient for the present to congratulate ourselves on the outstanding fact that the Congressional committees and the railroads' representatives have reached an agreement. In view of the difficulties that they had to deal with, and the radical nature of the decision which has now been reached, this is no less than a very unusual accomplishment.

The campaign of the railroads' mail-pay committee, now in its tenth year, evidently is not finished. In a sense the committee's work is just begun. It has accomplished a necessary and almost unique task in arousing the public to the injustices of the law and to the pettiness of the post office department, and through its influence on the public has aroused Congress; but now it must "get down to brass tacks," and put the facts of the situation before the Interstate Commerce Commission. At the very best a pretty broad discretion in administrative details—in fact, very extensive powers—must continue to be entrusted to the Postmaster General and his advisers, and the railroads must make sure that the Commission has all the facts necessary to enable it to lay down the correct principles in the most thorough detail possible. The business of the post office department is a matter

in which the whole public will always take an intimate interest, and its foundations should be of the soundest character.

DEFICIENCY OF EQUIPMENT IN 1915

NOTWITHSTANDING the natural growth in the demand for railway equipment from year to year, there were at the close of the fiscal year 1915 7,342 less freight cars in service and 815 less locomotives than were in service at the close of 1914. These figures are based upon the annual statistical statement of the Interstate Commerce Commission recently issued. In only three other years since 1890, when the Commission's figures began to be sufficiently complete to make them useful for comparison, has the number of freight cars in service shown a reduction from the number in service at the close of the preceding year. In only one year, except 1915, during the same period has the number of locomotives reported shown a falling off from the figures of the preceding year.

In 1895 there were 9,050 less freight cars in service than in 1894; in 1897 there were 157 less than in 1896. These were the dark days of the railway industry. The condition then existing is further reflected by the small increase in number of freight cars reported for 1896, the intervening year, when the increase was only 25,768—the smallest increase except in two of the years of the 25-year period in which there were any increases. In 1909, again, there was a falling off of 15,696 cars, compared with the number in service in 1908. But this apparent showing is modified by the fact that in the three years preceding additions to equipment were made so freely that the period has been characterized as one of over-confidence and over-building. Since 1909 there has been no indication of such a tendency. In fact, in the five years intervening between 1909 and 1915, when decreases in the number of freight cars in service were reported, there was a smaller aggregate addition to the total of freight car equipment than in the two years 1906 and 1907, notwithstanding the fact that operated mileage had increased about 30,000 miles between the periods. The number added to the total equipment in these recent five years was almost 125,000 cars less, also, than the aggregate additions from 1898 to 1902, a five-year period in which the amount of car building was certainly not abnormal. The mileage in the middle year of that five-year period was 60,000 miles less than in the middle year of the recent five-year period with which it is compared.

It is true that there has been no year in which there has been shown a decrease in aggregate freight car capacity as compared with the preceding year. The cars that are retired from service are of smaller capacity individually than the new cars with which they have been replaced. But the Interstate Commerce Commission's statistics of aggregate freight car capacity were not compiled for the years prior to 1904. Since that date only two years show a smaller aggregate increased capacity for the year than 1915. These years are 1909, when the total number of cars was 15,696 less than in the preceding year, and 1912, when the increase in number was only 7,912. In each of the years except those noted, the aggregate increase in capacity varied from nearly two and a quarter million tons to nearly eight million tons. In 1915 the increase in aggregate capacity was slightly over one million tons.

Naturally, the history of locomotive equipment in service has followed a course substantially parallel. Except 1912, there is no year from 1890 to 1915 in which there was a reduction in the number of locomotives. In 1912 there were 51 less locomotives than in 1911. In 1915 there were 815 less than in 1914. Of course, the number of locomotives necessary to be added to the total equipment is influenced by the greater hauling capacity of the locomotives built in recent years. But notwithstanding this fact, a comparison year by year of the figures in the accompanying table shows a substantial parallelism as to fat and lean years between the locomotive column and the freight car columns:

ANNUAL INCREASES IN EQUIPMENT FROM 1890 TO 1915*

	Freight Cars				Locomotives	
Year	Number	Increase in Number	Capacity, tons	Increase in capacity, tons	Number	Increase
1915.....	2,318,305	—7,342	91,982,452	1,005,354	63,945	—815
1914.....	2,325,647	52,083	90,977,098	3,998,953	64,760	1,382
1913.....	2,273,564	70,141	86,978,145	4,012,727	63,378	2,102
1912.....	2,203,423	7,912	82,965,418	888,390	61,276	—51
1911.....	2,195,511	60,390	81,077,028	4,498,293	61,327	2,380
1910.....	2,135,121	61,515	76,578,735	3,441,189	58,947	1,735
1909.....	2,073,606	—15,696	73,137,546	473,881	57,212	479
1908.....	2,089,302	97,745	72,663,665	5,630,341	56,733	1,345
1907.....	1,991,557	153,643	67,033,324	7,974,022	55,388	3,716
1906.....	1,837,914	106,505	59,059,302	5,804,219	51,672	3,315
1905.....	1,731,409	39,215	53,255,083	2,495,850	48,357	1,614
1904.....	1,692,194	38,412	50,759,133	2,228,852	46,743	2,872
1903.....	1,653,782	107,681	48,530,281	.....	43,871	2,646
1902.....	1,546,101	81,773	.....	.....	41,225	1,641
1901.....	1,464,328	98,797	.....	.....	39,584	1,921
1900.....	1,365,531	70,021	.....	.....	37,663	960
1899.....	1,295,510	46,684	.....	.....	36,703	469
1898.....	1,248,826	27,096	.....	.....	36,234	248
1897.....	1,221,730	—157	.....	.....	35,986	36
1896.....	1,221,887	25,768	.....	.....	35,950	251
1895.....	1,196,119	—9,050	.....	.....	35,699	207
1894.....	1,205,169	81,862	.....	.....	35,492	704
1893.....	1,013,307	46,309	.....	.....	34,788	1,652
1892.....	966,998	19,698	.....	.....	33,136	997
1891.....	947,300	28,809	.....	.....	32,139	1,999
1890.....	918,491	.....	.....	.....	30,140	...

*Figures for years 1912 to 1915, inclusive, do not include Class III roads.

Statistics of aggregate tractive power of locomotives have not been kept for a sufficient length of time to make them of use in the present consideration.

There is one source from which a side light is thrown upon the causes of this falling off in 1915 in the supply of needed equipment, so far, certainly, as freight car equipment is concerned. The Interstate Commerce Commission's compilation, in which the total freight car equipment is subdivided into seven classes, shows that there were substantial increases in 1915 over 1914 in the numbers of stock, tank and refrigerator cars, a very small increase (136) in the number of coal cars, and a falling off of 15,222 in the number of box, flat and "other" cars. Tank and refrigerator cars can be used only in the service for which they are intended. The same is true of stock cars, except to a limited extent. A clearly reasonable inference is that the demand for stock, tank and refrigerator cars has been met, so far as possible in straitened financial resources, in order to retain business that would otherwise be lost and that the deficiency has been allowed to fall principally upon the class of cars which can be, and ordinarily are, used for a variety of purposes. The poverty of equipment resources has thus been kept within the organization itself and its effects mitigated so far as possible by the more efficient handling of this general purpose equipment.

Some generalization perhaps is required to show fully the significance of these figures. Statistics of car and locomotive equipment purchased or ordered within a given period are universally taken as an approximately accurate indication either of the condition of the railway business within that period or of its anticipated condition within the immediate future.

These views are theoretically correct. Railway executive officers are in as favorable position as any business men to read correctly the signs of approaching depression or prosperity. Their business is one of the first to feel the effects of either fluctuation. Aside from sporadic cases of activity or depression, it is affected in a greater degree than most other lines of industry. Like the iron and steel busi-

ness, with which it is ordinarily closely associated, it becomes an accurate barometer of the general condition of industry in the country in which its system is situated. The actual fluctuations in the amount of equipment in service at the end of each fiscal year, as reported to the Interstate Commerce Commission and published as a part of its annual statistical report, compared year by year over a considerable period, reflect clearly not only the relative condition of the transportation industry in those years, but also to a marked degree the status of the general industries of the country.

On the theoretical basis before stated, this falling off in equipment in 1915 is a reflection of a condition in support of whose existence no argument is required. Business in transportation lines was slack. But a consideration of the statistics from a practical point of view indicates another reason why missing equipment numbers, at least, have not been filled. The necessary financial resources have not been available. It has not been possible, in view of constantly diminishing income until within the last few months, even to take advantage of slack conditions in the car and locomotive building industry. "Missing numbers" have been supplied to some extent by the varied use of old equipment, some of which would probably otherwise have been retired. The supply of additional equipment to meet probable requirements of a revived industry has been left to the chances of a beneficent future.

The railways are now enjoying a little prosperity. It may be only temporary. But they have the results of considerable periods of bad business and of ill-advised regulation to make up for. The average rate of dividend on all stock was less in 1915 than in any year since 1905, and the percentage of all stock on which dividends were paid was also less than in any year in the same period. The amount of equipment for handling business is shown by a correspondingly bad record. It will take much longer than the present period of prosperity can be insured to last to bring the equipment supply up to a fair normal for handling a normal business. It will take a longer period, a better system of regulation and some definite means of preventing the looting of incipient prosperity by labor brotherhoods before the railways find themselves on firm ground as to either dividends or equipment.

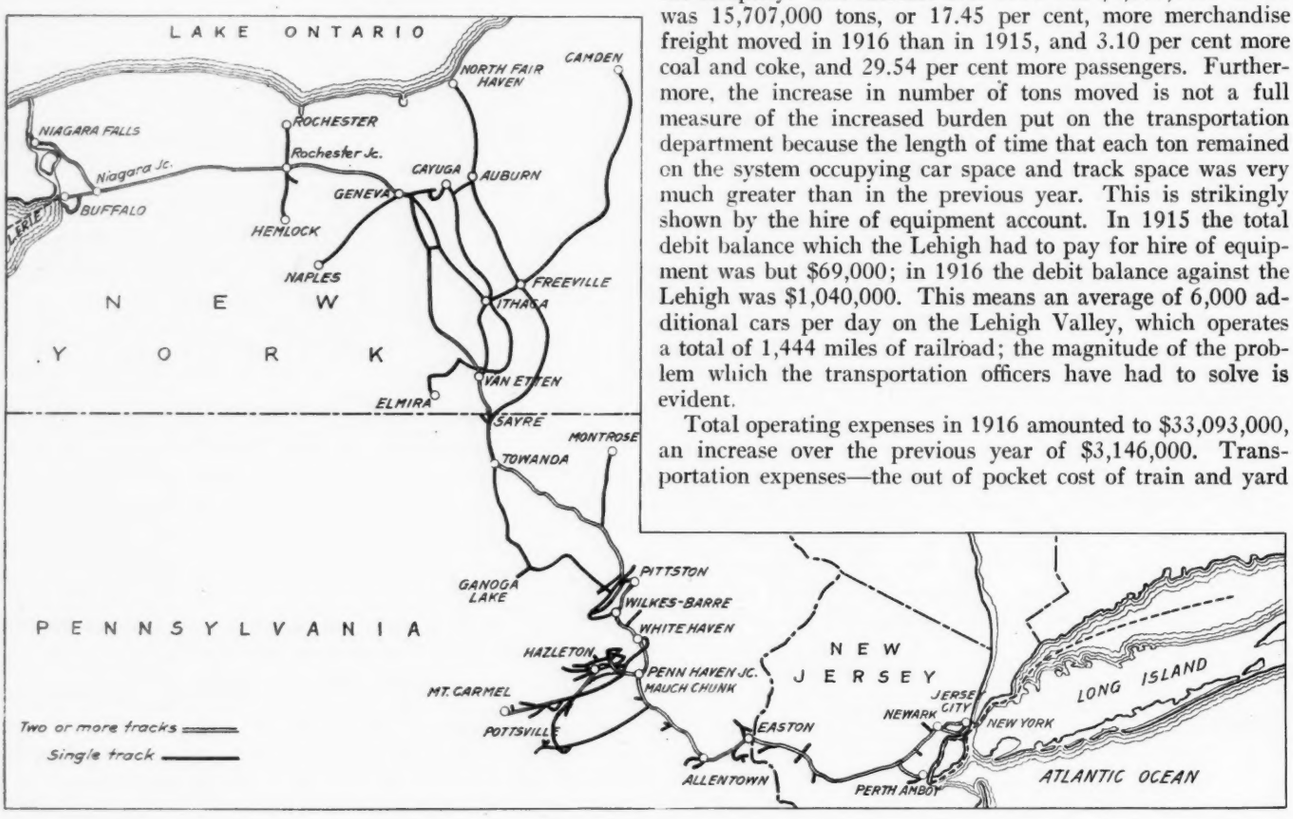
LEHIGH VALLEY

NEVER have the superintendents of car service, and with them every one concerned with car movement, on the eastern railroads had so hard a job as during the fiscal year just ended. The measure of the difficulty of the task is the amount of per diem which the eastern roads will have to pay. The measure of the success with which the opening organizations were able to cope with the car congestion in most cases will be in the inverse ratio of the percentage of increase of transportation expenses.

The Lehigh Valley in the fiscal year ended June 30, 1915, earned $47,383,000, the largest earnings in the history of the company. The increase over 1915 was $4,857,000. There was 15,707,000 tons, or 17.45 per cent, more merchandise freight moved in 1916 than in 1915, and 3.10 per cent more coal and coke, and 29.54 per cent more passengers. Furthermore, the increase in number of tons moved is not a full measure of the increased burden put on the transportation department because the length of time that each ton remained on the system occupying car space and track space was very much greater than in the previous year. This is strikingly shown by the hire of equipment account. In 1915 the total debit balance which the Lehigh had to pay for hire of equipment was but $69,000; in 1916 the debit balance against the Lehigh was $1,040,000. This means an average of 6,000 additional cars per day on the Lehigh Valley, which operates a total of 1,444 miles of railroad; the magnitude of the problem which the transportation officers have had to solve is evident.

Total operating expenses in 1916 amounted to $33,093,000, an increase over the previous year of $3,146,000. Transportation expenses—the out of pocket cost of train and yard operation—were $17,090,000 in 1916 as against $15,382,000 in 1915, an increase of $1,708,000, or 11.10 per cent. The ratio of transportation expenses to total operating revenues was 36.07 as compared with 36.17 in the previous year. This is a highly creditable showing.

The Lehigh made large expenditures—$10,643,000—for additions and betterments, many of which presumably necessitated additional charges to the maintenance of way account. During the year 16 steel bridges and 13 concrete steel bridges were built to replace light iron or wooden bridges; 7 wooden bridges were replaced by ballasted floor creosoted timber bridges, and 2 wooden bridges were replaced by fills. Total maintenance of way expenses in 1916 were $4,658,000, or 3.88 per cent more than the expenditures in 1915.



The Lehigh Valley

This year of large earnings was availed of by the management to bring up the standard of equipment. Twenty-eight locomotives, 1 passenger car, 1 express car, 1 fruit car, 1,551 freight cars and 161 road service cars were condemned and sold or scrapped. Apparently the accrued depreciation on locomotives was sufficient to almost cover the difference between scrap value and book value. On freight cars, however, there was a charge of $369,000 to retirement expenses, representing the difference between accrued depreciation and scrap value. The Lehigh Valley has been quite liberal in its charges for depreciation, there being a reserve carried on its balance sheet of $9,438,000 against equipment, the book value of which is $56,588,000. The new equipment which was bought and the cost of which, of course, is included in the $10,643,000 spent for additions and betterments, included 25 freight locomotives, 20 switching locomotives, 9 passenger locomotives, 7 locomotive tenders, 20 steel underframe milk cars, 4 steel flat cars, 25 steel underframe eight-wheel cabooses and 7 locomotive cranes. During the year 65 heavy Consolidation freight locomotives and 10 Ten-wheel freight locomotives were rebuilt and equipped with superheaters, new cylinders and Walschaert valve gears. In this connection it is interesting to note that the total locomotive mileage in 1916 was 24,191,000, an increase over 1915 of 1,864,000, or 8.6 per cent. The total expense for fuel for road locomotives was $3,033,000 in 1916, or $19,000 less than in 1915, and for yard locomotives, $542,000, or $51,000 less than in 1915. The cost of fuel per locomotive-mile was 14.98 cents in 1916 as against 16.14 cents in 1915. The fuel used per freight locomotive-mile was 236.6 lb. in 1916 as against 250.1 lb. in 1915; per passenger locomotive-mile, 129.5 lb. as against 131.5 lb.; and per switching and other locomotive-mile, 106.3 lb. as against 110.2 lb.

The Lehigh is carrying out an extensive plan of additions and betterments to its equipment. Orders have been placed for 36 Pacific type locomotives, 55 freight locomotives, 16 locomotive tenders, 1,500 80,000-lb. steel underframe and steel end box cars, 25 steel underframe eight-wheel cabooses, 2 all-steel dining cars and 2 locomotive cranes.

Since the Lehigh increased its stock in 1910 by the sale of 403,338 shares (par value $50 per share), which produced $20,166,900 cash, have been sold in 1913 $10,000,000 general consolidated mortgage bonds, and in 1916, $10,697,000 of these bonds. Since July 1, 1910, the company has retired $20,114,538 of securities held by the public, has spent for additions and betterments $19,977,152, and has spent for additional rolling stock and floating equipment $16,419,838, a total of $56,511,528. This compares with total receipts from the sale of the stock and two issues of bonds of $39,703,445. In other words, the company has spent out of its surplus earnings and current cash funds $16,808,083 for additions and betterments to the property, against which no securities have been issued. At the end of the fiscal year 1916 there was $15,127,000 cash on hand, with no loans and bills payable, and total current liabilities of but $8,846,000.

The following table shows the principal figures for operation in 1916 as compared with 1915:

	1916	1915
Mileage operated	1,444	1,442
Coal freight revenue	$18,811,100	$19,195,756
Merchandise freight revenue	20,363,251	16,005,501
Passenger revenue	4,300,183	4,043,799
Total operating revenues	47,382,569	42,525,962
Maintenance of way and structures	4,657,854	4,483,925
Maintenance of equipment	9,364,629	8,207,491
Traffic expenses	996,249	959,830
Transportation expenses	17,090,114	15,382,187
General expenses	984,132	913,955
Total operating expenses	33,092,978	29,947,388
Taxes	1,706,093	1,691,989
Operating income	12,574,714	10,871,803
Total income	15,241,240	12,882,822
Net income	7,666,440	6,322,445
Dividends	6,060,800	6,060,800
Surplus	1,605,640	261,645

BUFFALO, ROCHESTER & PITTSBURGH

A YEAR ago it was predicted in these columns that unless something unforeseeable intervened to prevent, the Buffalo, Rochester & Pittsburgh would make a record showing in the fiscal year ended June 30, 1916. This prediction has been borne out, but only because the operating department made a better performance even than could have been conservatively thought possible.

The Buffalo, Rochester & Pittsburgh had the largest gross in its history, the largest average trainload and the lowest ratio of transportation expenses to gross, notwithstanding the fact that it had the lowest average ton-mile rate in its history, with the exception of 1914 and 1913. Heavier train-loading was, of course, the important factor in the low ratio

Buffalo, Rochester & Pittsburgh

of transportation expenses to gross earnings; but the trainload of 786 tons as compared with 710 tons in 1913, the best previous year, was due not to more favorable traffic conditions but to better carloading and longer trains.

The Buffalo, Rochester & Pittsburgh operates 586 miles of road, the main lines running from Buffalo, N. Y., and Rochester to Ashford; from there south to Ribold Junction, Pa., and from there west to New Castle, Pa., and south to Pittsburgh. The total tonnage of freight transported in 1916 was 14,134,000 tons. Of this 8,905,000 tons was bituminous coal. The coal fields are at the southern end of the line, and while a part of the coal tonnage moves only as far north as Clearfield, Pa., where it is delivered to the New

York Central, a large part moves almost the full length of the line and goes either to Buffalo or Rochester or is shipped across Lake Ontario to Cobourg. At Punxsutawney there is a large iron furnace and ore for this furnace is hauled south almost the length of the line. Nothing, therefore, will be reflected quicker in an increased average trainload than an increase in the tonnage of iron ore. In 1913, which was the best previous year in the Buffalo, Rochester & Pittsburgh's history, the total tonnage of all freight was 12,491,000, comparing with 14,134,000 in 1916; but the tonnage of ore in 1913 was 781,000 tons as against 695,000 tons in 1916. The trainload, as was previously mentioned, was 710 tons in 1913 and 786 tons in 1916. The ratio of transportation expenses to gross earnings was 32.71 in 1913 and 31.91 in 1916. The average ton-mile rate was 4.61 mills in 1913 and 4.64 mills in 1916. In other words, with a ton-mile rate higher by less than one per cent; with the scale of wages materially higher, and with the price of materials as high or higher, the transportation ratio was 31.91 in 1916 as compared with 32.71 in 1913.

It is really more enlightening to compare 1916 with 1913 than with 1915. The latter was an extraordinarily bad year, 1916 an extraordinarily good one; and the contrast between the two, therefore, is striking. Total operating revenues in 1916 were $11,971,000, or $2,491,000 more than in 1915. Operating expenses were $8,649,000 in 1916, an increase of $1,714,000 over 1915. With a slight decrease in interest and rental charges, and helped by an increase of $298,000 in credit balance for hire of equipment, there was $1,293,000 available for dividends in 1916 as against $780,000 available for dividends in 1915. In both years the company paid 4 per cent on its $10,500,000 common stock, but since the close of the year has raised the annual dividend rate to 6 per cent. The earnings in 1916 on the total outstanding stock was 7.84 per cent.

In 1916 the management was liberal in expenditures for maintenance. Expenditures for maintenance of way and structures amounted to $1,653,000 in 1916, an increase over the previous year of $386,000, or 30 per cent. Maintenance of equipment cost $2,754,000, an increase over the previous year of $618,000, or 29 per cent.

The Buffalo, Rochester & Pittsburgh being a north and south road and an originating line, unlike the east and west roads terminating at New York and Boston, was not congested with rolling stock from other railroads but was called upon to furnish cars for shipments to destinations off the home lines. Notwithstanding this fact, however, there was not at any time during the entire fiscal year ended June 30, 1916, a car shortage on the road. It has been a fixed policy of the management to provide amply for the car requirements of the shippers on its lines. There were no additions to locomotives or cars in service, but steel underframes were applied to 1,984 freight cars and 7 locomotives were equipped with superheaters.

There was $574,000 spent for additions and betterments to roadway and buildings, the two largest amounts being $173,000 for yard extensions and sidings and $66,000 for land for a storage warehouse at Rochester. The more important work now in progress is the strengthening of steel bridges, the subway at Saxton street, Rochester, and the replacing of timber bridges, trestles and culverts in permanent form.

As of June 30, there was $512,000 cash on hand and $909,000 demand loans and deposits, comparing with $229,000 cash and $1,181,000 demand loans and deposits at the end of the previous year. There are no loans and bills payable (a few thousand dollars is shown under this head on the balance sheet, complying technically with the requirements of the Interstate Commerce Commission) and total current liabilities on June 30, 1916, were $1,392,000, comparing with $1,245,000 in the previous year.

The following table shows the principal figures for operation in 1916 as compared with 1915:

	1916	1915
Mileage operated	586	586
Freight revenue	$10,381,647	$8,022,690
Passenger revenue	1,144,892	1,101,981
Total operating revenue	11,971,019	9,479,936
Maintenance of way and structures	1,652,890	1,267,254
Maintenance of equipment	2,753,623	2,135,354
Traffic expenses	142,839	141,767
Transportation expenses	3,819,911	3,144,598
Miscellaneous expenses	15,282	14,658
General expenses	264,244	231,621
Total operating expenses	8,648,790	6,935,252
Taxes	250,000	230,000
Operating income	3,072,101	2,314,087
Gross income	4,088,200	3,032,733
Net income	1,964,137	921,720
Appropriations (pensions and retirements of equipment trusts)	671,317	132,720
Dividends	780,000	780,000
Surplus	512,820	.....

NEW BOOKS

Scientific Management and Labor. By Robert Franklin Hoxie, associate professor of political economy, University of Chicago. Bound in cloth. 302 pages, 5 in. by 7½ in. Published by D. Appleton & Co., New York. Price $1.50.

Generally speaking, through improvements in industrial processes and elimination of wastes in the expenditure of labor, scientific management is designed to serve the interest of employers and workmen alike, as well as society at large. That in many respects it has accomplished much toward this end cannot be denied. It has standardized facilities and processes, and has brought about co-ordination of effort where little better than confusion existed before. In its methods of dealing with labor, however, it has generally failed to win confidence, either because of the blind prejudice of organized labor or a lack of appreciation of the complexity of the labor problem. With the claims of the advocates of scientific management as to its relation to labor and those of the labor leaders, directly opposed to each other there has been practically no reliable information available from which an unprejudiced opinion on the merits of the controversy could be formed. Primarily to test the validity of these opposing claims as brought out at the hearings on scientific management held by the United States Commission on Industrial Relations in April, 1914, the author was commissioned to conduct a thorough investigation of the relations of labor to scientific management as they have developed in the operation of the three generally recognized systems.

The present volume contains the conclusions of the author based on the results of this investigation. The points at issue were carefully analyzed and a comprehensive study was made of scientific management as it was found in actual operation in 35 shops and other concerns. Care was taken throughout the investigation that it might be entirely impartial and to this end the author was assisted by a representative of employing management and a representative of labor, both of whom have fully approved the author's conclusions. In a number of appendices at the close of the volume are contained detailed statements of the labor claims of the three principal exponents of scientific management and the trade union objections to the system, together with a statement of the vital points at issue. The volume closes with the text of an elaborate questionnaire by the use of which most of the facts were obtained.

This volume is a valuable addition to the literature on scientific management and cannot fail to prove of great interest to all who are in any way concerned in the administration of the system, as well as to shop managers generally. The extravagance of the labor claims which have been made for scientific management is clearly indicated, some of them being inherently opposed to the system employed. It is also evident that there has been a disregard for the human element in all its complexity, throughout the system. Notwithstanding the numerous defects, however, "it is to date the latest word in the sheer mechanics of production and inherently in line with the march of events."

Letters to the Editor

REDUCTION OF OVER, SHORT AND DAMAGED CLAIMS

DETROIT, Mich.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Under the above heading, there appeared in your issue of June 23, several very interesting contributions. Railroads all over the country are conducting campaigns looking to the better handling of package freight in an effort to reduce the payment of claims.

Some railroads have made remarkable reductions. It is doubtful, however, if the full measure of results will be obtained as long as the operating, traffic and classification departments are so widely divorced one from the other. The payment of all loss and damage claims is charged to the operating department, yet, except in a few instances, the operating department does not have any direct control over the machinery which contributes most to these payments.

In the handling of locomotives, trains and cars, the operating department directs their every movement. If a car is found to have any defects, affecting safety in the movement, it will not be moved until the defects have been corrected; and in the case of a car offered by a connection, it will not be accepted, or, if it is, the lading will be transferred to a car that is safe to run and the cost of the transfer assessed against the delivering road.

The Bureau of Explosives designates the character of equipment to be used in the transporting of explosives, defines how the cars shall be equipped and how the commodity shall be loaded, braced, etc. It even goes further and restricts the loading of different kinds of explosives and inflammables in the same car, and finally prescribes certain placards that shall be placed on both the sides and ends of cars containing certain commodities.

When we come to the question of handling other freight, we are confronted with a different proposition. The traffic and classification departments say that a shipper is permitted to ship flour in sacks made of paper and muslin, and where the shipments number more than ten bags to any one consignee, it is only necessary that the name of consignee and destination shall be marked on one out of every ten bags. This latter provision not only applies to shipments of flour, but to many other articles. The operating department has no voice in the matter, but is bound, under the terms of the contract as contained in the bill of lading, to handle the shipment of flour to destination and deliver the correct number of bags of the proper brand to the rightful consignee, or pay for it.

The classification provides for the shipment of household effects, with but few restrictions as to crating, packing, etc. A shipper, therefore, can have all of his household and kitchen furniture taken from a steam heated flat, where the glue has been melted out of nearly every article, and tender them to the railroad, destined to a point 400 miles away, necessitating from two to three or more transfers, and demand that the shipment be delivered at destination in as good condition as when taken from his flat, or pay for it.

The classification provides for the acceptance of shipments of electric light bulbs, lamps, fruit jars and other articles packed in fiber cartons. In many instances the glass in the electric light bulbs and small lamps is blown to a thickness of little more than one thirty-second of an inch. It is claimed by the manufacturers that this is done for two reasons, first, to secure as high a refraction power as possible, and, second, to put the cost at such a figure that the 5 and 10 cent stores and others can sell them at an arbitrary price of ten cents each. The glass in many of these articles is so brittle that the shock of throwing down a heavy piece of freight close to one of the shipments on a cement floor has been known to fracture one or more.

The classification permits chairs, rockers and other articles to be shipped, simply wrapped with one thickness of flimsy paper, and frequently not that. The material in many of those chairs and rockers is old, punkey, kiln-dried lumber cut across the grain, and further weakened by the holes drilled almost through the round or runner to accommodate the connecting rung. The slightest jar or fall will break off a leg from a chair, or a runner from a rocker.

The classification provides that shipments of cigars shall be corded and sealed, but is silent as to requirements covering shipments of shoes, clothing, hats, etc., even when packed in second hand recoopered cases; neither is any special protection thrown around the shipment of case goods, such as whiskey, etc., one of the most fruitful sources for claims due to theft, a large percentage of which no doubt is done before shipments are delivered to the railroad.

It would be possible to add to the above scores of other articles which, through the provisions of the classification, railroads are compelled to handle, and on which it is almost impossible to reduce damage claims to a greater extent than is being done at present. It would therefore seem that one of the first, and at the same time one of the most important things to do, is for the freight claim agents throughout the country to compile complete data covering the payment of loss and damage, showing the various items, the character of the retainer and packing, the handling from point of shipment to destination and delivery to consignee and the amount paid out in claims as compared with the revenue received. In this way the Classification Committee will be in a position to take some action and give the railroads the necessary relief.

It will not do for any single railroad to do this, as certainly, in the absence of any general complaint, supported by proper data, the Classification Committee would not be justified in making an arbitrary ruling affecting the entire territory on the simple complaint of one line.

I would like to add, and I say it on the strength of some of the investigations we have made, that I believe the railroads of the country are paying out hundreds of thousands of dollars every year to shippers and consignees, covering both loss and damage, while both are chargeable to either the shipper or consignee, or some of their subordinates, in that the article paid for was never shipped or was broken or damaged before shipment was made, or after its delivery. In such cases all the missionary work done by railroads in their efforts to handle freight carefully, will never put back a pair of shoes or suit of clothes that has never been packed, or mend a dozen plates, cups, saucers, tumblers or high priced vases broken by a careless packer. It is a matter of record that in a shipment of 50 cases of 50 dozen eggs each, made from a point in Russia to Pittsburgh, Pa., a distance of about 9000 miles, not a single egg was broken, although the eggs were simply packed loose in shavings; yet there is hardly a single shipment of casks of crockery or earthenware made in the country, moving a distance of one hundred miles or more, that a claim is not presented for the breakage of from ten to one hundred articles.

There is one very important feature in connection with the payment of claims for shortages I am afraid railroads have overlooked, and that is they are paying out large sums of money annually, not so much because they have actually lost the shipment, but because they have lost their record of it. How many railroad officers realize the number of shipments being moved on free astray billing and delivered to consignee, in many cases even without the collection of any revenue, when at the same time their own road or some

other road has or will pay a claim for the shipment which had checked short months before.

How many railroads are demanding the surrender of the bill of lading or other proof of ownership in the delivery of shipments received on free astray billing?

While we are campaigning along the lines of better loading and more careful handling of L C L freight with the view of reducing our loss and damage payments, let us not lose sight of the fact that there are other avenues for leaks that are equally as important.

JOHN W. CARROLL,
Chief, O. S. & D. Bureau, Michigan Central.

SAFETY ON GERMAN AND AMERICAN RAILWAYS

NEW YORK.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In a communication in your issue of June 30, Wm. Barclay Parsons takes exception to my conclusions as to the comparative safety of German and American railways as set forth in the article, "Where German Efficiency Falls Down," published in your issue of June 16.

With regard to passengers killed, Mr. Parsons shows that *during the 30 years prior to 1910* the German railways were unquestionably safer on a passenger mile basis than were the railways of the United States. I can easily see that if 30 years ago I or anyone else had made a comparison of the German and American railways from a safety standpoint the verdict would have been in favor of Germany.

Mr. Parsons' figures show, however, that the American railways were making continuous improvement throughout that period, and in 1910 were rapidly overhauling the Germans. Both Mr. Parsons' and my figures are correct and, therefore, of course do not and cannot conflict in any way. Mine are more recent, that's all.

Still less effective is Mr. Parsons' argument, based on the number of passengers carried regardless of distance, which, he says, "is not an unfair method of comparison." I shall let Mr. Parsons himself dispose of this point. This he does very nicely on page 26 of his paper on the "General Statistics of the Railways of the World," when, discussing the basis in question, he says, "But this again is not fair to those countries where the passenger journey is long." As the average passenger journey in the United States is nearly two and one-half times as long as in Germany, Mr. Parsons clearly believes that the basis which he has used is not fair to the United States. He further states in the paper referred to that "it would seem as if the proper basis on which to compare the safety to passengers carried is on the number of passenger miles traveled." This is the basis I used.

In regard to injuries to trainmen, Mr. Parsons says that I have included in my German statistics "All employees killed no matter what their occupation, including those in shops, construction, etc., whereas in the United States the number killed are only those killed by train accidents." Here Mr. Parsons misstates the facts. The German official statistics very properly do *not* include those killed is shops, construction, etc. Below is an analysis of the figures for both Germany and the United States:

GERMANY

Employees on duty—	Killed
Without fault of their own:	
In train accidents	24
Through their own carelessness:	
In trains or cars in motion	82
In making up trains	75
In coupling cars	120
While on tracks in way of moving cars or trains	295
Through other forms of carelessness	86
Total	682

UNITED STATES

Employees on duty—	Number killed			
Train accidents:	Trainmen	Trainmen in yards	Yard trainmen	Total
Collisions	128	29	46	203
Derailments	159	9	20	188
Boiler explosions	8	1	..	9
Accidents to trains other than above	1	..	2	3
Total in train accidents	296	39	68	403
Other than train accidents:				
Coupling or uncoupling cars	46	45	72	163
Attending switches and other work	41	24	42	107
Struck by overhead bridges, tunnels, etc.	51	12	18	81
Falling from cars or engines	156	54	130	340
Getting on or off cars or engines	30	15	31	76
Struck or run over at yards or stations	43	69	112	224
Struck or run over at other places	71	..	5	76
Other causes	4	2	1	7
Total other than train accidents	442	221	411	1,074
Grand total	738	260	479	1,477

The above statistics are those of 1912 for Germany and 1914 for the United States. At the time my article was written they represented the latest figures available for each country, but now the figures for 1913 and 1915, respectively, are at hand. The following table, which shows that the situation in Germany was steadily getting worse during the years immediately preceding the war, while in the United States the reverse was true, proves that no injustice was done the Germans by using its figures for 1912 for purposes of comparison.

	Number trainmen killed			Number trainmen killed per 1,000 employed		
	1911	1912	1913	1911	1912	1913
Germany	563	682	747	4.2	5.0	5.7
	1913	1914	1915	1913	1914	1915
United States	1,700	1,477	884	5.1	4.7	3.5

Mr. Parsons' next and last objection is that I took account of fatal accidents only, ignoring non-fatal injuries. My reason for doing this was that the term "injury" is such an elastic one that comparisons are worthless unless the definition of what constitutes an injury is the same for both countries. The term "killed" is pretty definite and conclusive and there can be no difference of opinion about the degree to which a person must be killed to be placed in the "killed" column. Not so in the matter of injuries. In Germany only the more serious injuries are reported, but in the United States so exacting are the requirements of the Interstate Commerce Commission that if a passenger fills the rack over his head with parcels and one falls down and strikes him on the head, the incident is very likely to count at the end of the year in the "passengers injured" column.

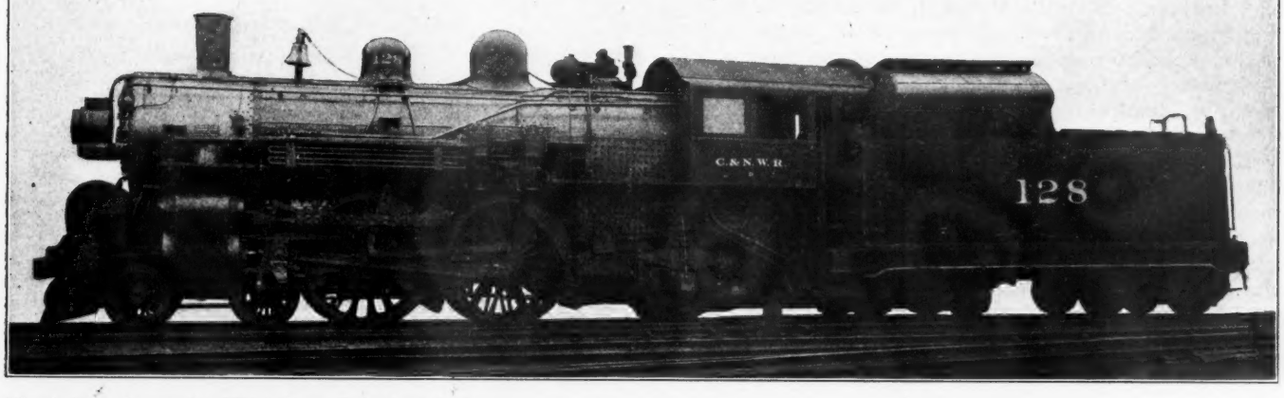
If this sounds ridiculous—and it certainly does—it may be enlightening to turn to I. C. C. Accident Bulletin No. 52 for the year ending June 30, 1914. On page 35 appears an "Analysis of accidents to persons," which shows that no fewer than 186 "injuries" were caused during the year by "objects falling from fastenings or racks in coaches or cabooses." Again, "unexpected closing of car doors" accounted for 742 injuries (a large part of the 742 probably representing pinched fingers or bruised noses), and 481 were victims of "window sashes of coaches or cabooses falling on hand or arm."

In Germany few, if any, of the above accidents would ever have been reported at all. Common sense tells one that if, as Mr. Parsons says, German railways injure only 3 persons for every one they kill, while American railroads injure 10 or 20 for every one killed, the conclusion is not inevitable that German accidents are so much more deadly than ours or that we injure so many more persons. The only reasonable deduction is what the evidence above indicates—that American railroads report a great many injuries that German railways would not report at all.

H. W. FAUS.

North Western Pulverized Coal Locomotive

A Description of the Equipment on an Atlantic Type Engine, and Some of the Results of Comparative Tests



Atlantic Type Locomotive Which Burns Pulverized Coal

ON August 8, 1915, the Chicago & North Western placed in service one of its standard high-speed Atlantic type locomotives equipped for burning pulverized coal. This engine was the second in this country to be so equipped and was therefore of a somewhat experimental nature. Regardless of this fact, however, it has never failed in active service and has been used more or less of the time for test purposes. The general dimensions of this locomotive are as follows:

Total weight of engine	180,000 lb.
Weight on driving wheels	96,000 lb.
Tractive effort	21,850 lb.
Cylinders, diameter and stroke	20 in. by 26 in.
Driving wheels, diameter	81 in.
Size of firebox	108⅛ in. by 65¼ in.
Firebox heating surface	170.7 sq. ft.
Total heating surface	2,770.7 sq. ft.
Superheating surface	428 sq. ft.
Steam pressure	185 lb.

The equipment installed on this engine was obtained from the Locomotive Pulverized Fuel Company, New York, and is substantially the same as that described by J. E. Muhlfeld in a paper before the New York Railroad Club last February and abstracted in the *Railway Age Gazette* of February 26, 1916, page 349. On this locomotive, however, the blower fan and the feeding mechanism are driven by electric motors which receive their electrical energy from a Curtis turbogenerator set located on the front of the engine, as shown in the illustration at the head of this article. This, it should be understood, was only a temporary expedient as the variable speed steam turbine now used for driving the feeding mechanism had not been developed sufficiently to be used on this locomotive.

It will be remembered that the pulverized coal is contained in an enclosed tank on the tender. Screw conveyors bring the fuel to the feeders where it commingles with the air from the fan and is blown through the outlets and flexible conduits to the three burners on the locomotive. Fig. 1 shows a front view of the tender with the three passages to the burners. From the flexible conduit the coal and air mixture passes into the nozzle and from there to the mixing chambers, where additional air is automatically admitted by induction, according to the amount of fuel being used, before it reaches the burner outlets. The dampers in the mixing chambers are for the purpose of adjusting the volume and velocity of the induced air supplied at this point, and are run open when the locomotive is using steam and shut when the locomotive is drifting or standing. These dampers are under the direct control of the fireman. The speed at which the screw conveyors in the tank operate is also controlled by the fireman, all the controlling apparatus being conveniently located, as indicated by Fig. 2, the interior view of the cab. From the burner outlets the fuel and air pass into the gasifying chamber, which is formed by a primary arch, as shown in Fig. 3, and thence into the combustion chamber. The products of combustion pass forward and up, over the brick arch, shown in Fig. 4, to the tubes. The brick arch is one brick longer than was previously used on the same engine when hand fired, which increases the flameway and the evaporation efficiency of the backhead of the boiler. The fire door has a machined fit in the door ring and is held closed by three clamps.

In view of the high temperatures obtained in the firebox of this locomotive it was expected that some difficulty would be experienced in the life of the brick work, but due to the action of the flame, which, due to induction, has a rolling rather than a blast action, no undue trouble has been found. On the other hand, it is believed that the firebox is in better condition than it would have been had the locomotive been placed in hand-fired service. The use of this apparatus has increased the capacity at which the boiler may be operated to the extent that three 4-in. safety valves are required to properly relieve the boiler where three 3-in. valves had been found to be satisfactory previously. It has also been found possible to increase the size of the nozzle, which, of course, reduces the back pressure in the cylinders. In addition to these advantages this engine has all the advantages of the oil-burning engines in that the clinker pit delays are eliminated and no grates, ash pans, front end nettings nor firing tools are required. The work of the fireman is greatly reduced and he has a much better opportunity to watch for signals and obstructions on the track. The firing is cinderless and sparkless and the control and elimination of the smoke is accomplished far easier than on hand or stoker-fired engines. The boiler tubes and front end are kept remarkably clean and the evaporative efficiency of the boiler is materially increased.

Of the lessons learned during the experimenting with this locomotive, that of having the coal properly prepared is perhaps the most important. The recommendations of the company supplying the apparatus for the burning of pulverized coal are that the coal shall contain one per cent or less of moisture and shall be pulverized so that 85 per cent of the total will pass through a 200 mesh screen and 95 per cent of the total through a 100 mesh screen. If the coal is too

moist it is liable to honeycomb on the brick work and tube sheet, while if it is not pulverized fine enough it will tend to coke and adhere to the bottom of the brick work under the front of the arch. The firing of the engine must also be watched to prevent any over-production of steam, especially in the service in which this engine is used, and the resultant waste through the safety valves. When on the road the fireman anticipates the manipulation of the throttle by the engineer by shutting off the supply of coal to the firebox some 20 or 30 seconds before the engineer closes the throttle. The performance of the engine on the road is ideal from an operating standpoint, as well as from a fuel consumption standpoint, as will be shown later.

The control of the fire is such that while standing at stations it can be extinguished entirely to prevent the waste of steam through the pops. On one trip to Milwaukee the fire was thus put out 25 minutes before starting time and started only 5 minutes before leaving. At the end of the run there was a layover of 2¾ hours. The fire was extinguished immediately on arrival, the boiler pressure being 175 lb., and

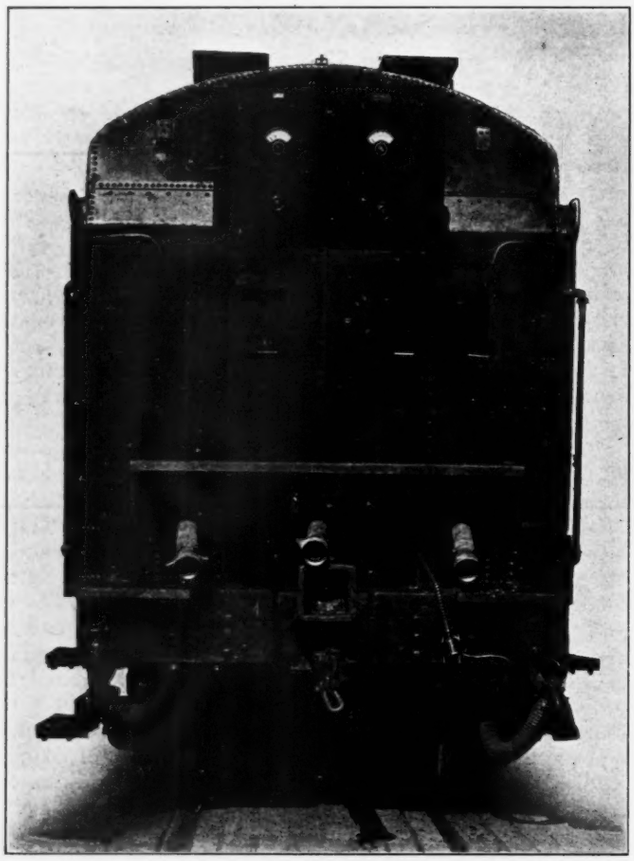


Fig. 1—Front End of the Tender of the North Western Locomotive

the engine taken to the roundhouse. It was started again 1 hr. 55 min. later, the boiler pressure having fallen to 120 lb., 65 lb. below the working pressure. In 12 minutes the pressure was raised to 150 lb. and in 22 minutes to 180 lb. The engine was then taken to the train and the boiler was well filled with water, the fuel supply being reduced during this time. Kentucky unwashed screenings were used on this trip, consisting in pulverized form of:

Moisture	1.9 to 2.8 per cent
Volatile matter	36.00 per cent
Fixed carbon	54.00 per cent
Ash	8.00 per cent
Sulphur	.79 per cent
B. t. u.	13,964

At the completion of the round trip it was estimated that there was about 50 lb. of slag in the pan. The tube sheet was perfectly clean.

The superheat obtained with this engine is very satisfactory, rising gradually on starting and being maintained at 250 deg. while running. The emission of smoke is practically negligible. After the engine has stood for some time with little or no fire there will be some smoke when the fire

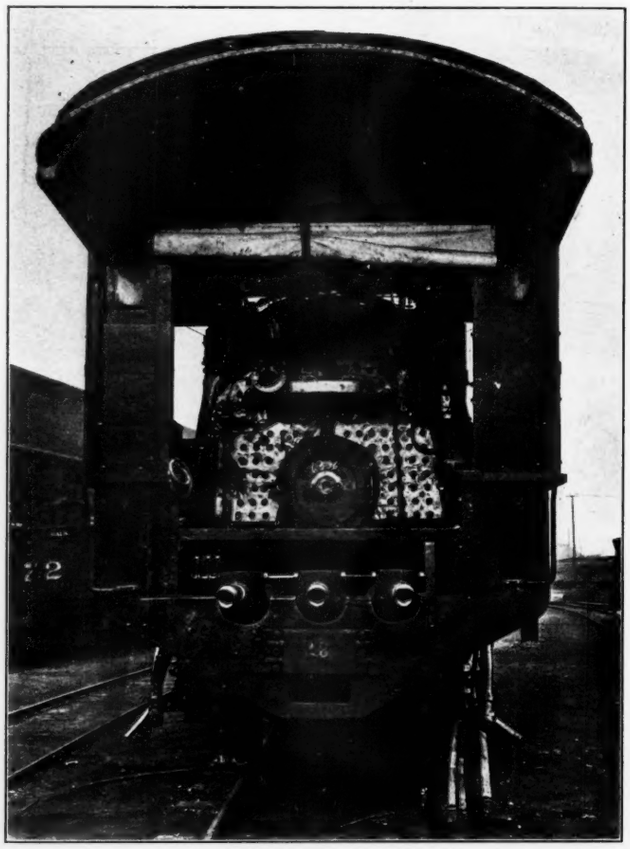


Fig. 2—Looking Into the Cab of the North Western Locomotive

is again started. It is of far less density, however, than is obtained on hand-fired engines and as soon as the temperature of the firebox has been raised sufficiently high the smoke will disappear entirely.

This locomotive is fired up with pulverized coal, but in case steam is not available for the operation of the stack blower and turbines, wood may be used in the ordinary manner. Where steam is available it can be easily piped to the engine to drive the feeding apparatus until enough steam has been generated in the locomotive boiler to it. About 60 lb. pressure is required. By this method 100 lb. of steam can be obtained from a boiler of cold water in from 40 to 50 minutes. In the comparative tests mentioned below, 1.569 tons of coal was used in firing up, bringing the engine to and from the roundhouse and in supplying fuel to the firebox during all the "dead" time, as compared with 2.775 tons on a similar engine hand-fired. In the firing up alone other tests have shown the full boiler pressure can be obtained with 750 lb. of coal on the pulverized coal engine as compared with 1,700 lb. on the hand-fired engine of the same class. In the latter comparison it must be remembered that in the hand-fired engine there is a bed of fuel on the grates that still possesses considerable heat energy. On the other hand, the pulverized coal engine has much more brick work than the hand-fired engine in which a large amount of heat will be stored during the process of firing up.

Several road tests have been made with this engine as compared with an engine of the same class hand-fired. The tests shown below, which were made in the early part of last April, give a good indication of what this engine has done. The tests were made in passenger service between Chicago and Milwaukee, a distance of about 85 miles. Two separate tests of two round trips were made; one with the pulverized coal-burning engine burning pulverized Kentucky unwashed screenings, and one with a hand-fired engine of the same class burning Kentucky lump coal. Both engines were equipped with superheaters and with the Walschaert valve gear. The hand-fired engine was equipped with the Kingan-Ripken valve gear attachment.* A dynamometer car was used in all of the tests. The following table gives the average results of the tests:

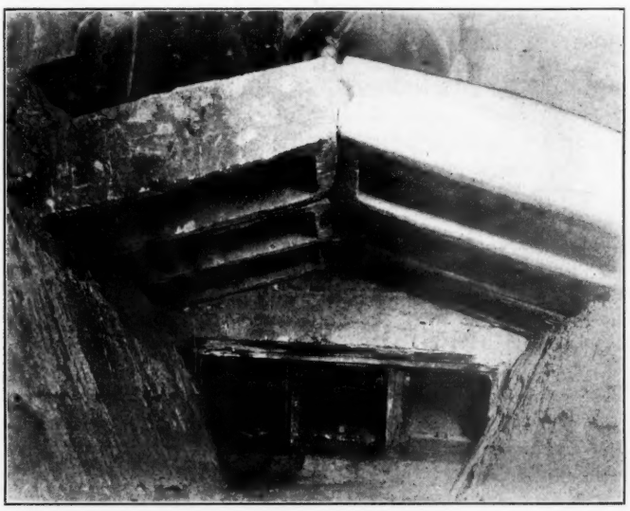


Fig. 3—Looking Toward the Back of the Firebox, Showing the Primary Arch and the Burners

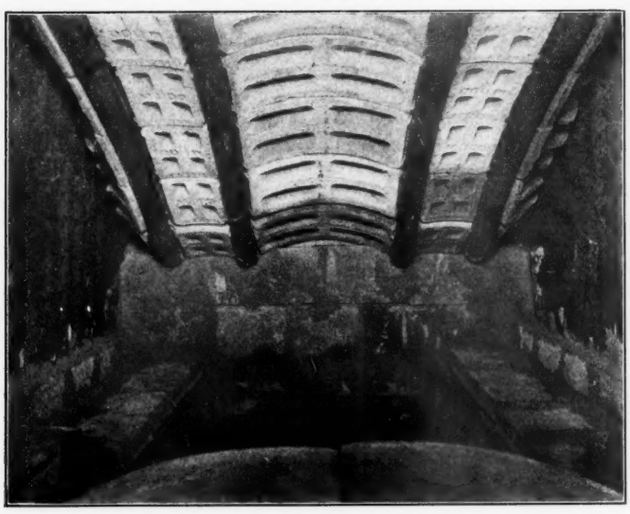


Fig. 4—Looking Forward in the Firebox of the Pulverized Fuel Locomotive

Locomotive number	128	127
Method of firing	Pulverized fuel	Hand
Kind of coal used	Ky. screenings	Ky. lump
Elapsed time (hours)	4.0276	4.0958
Running time (hours)	3.8687	3.9688
Tonnage	291	278
Number of cars	5.8	5.5
Mileage	170.79	170.75
Average drawbar pull (pounds)	2,711	2,527
Horsepower per hour	319.5	290.3
Coal used (tons), running	3.815	3.783
Water used (gallons), running	8,381	7,350
Coal per hp. hr. (pounds)	6.17	6.57
Water per hp. hr. (pounds)	56.48	53.14
Water evaporated per lb. coal (pounds)	9.15	8.09
Coal used for firing up† (tons)	1.569	2.775
Total coal used (tons)	5.384	6.558

*See *Railway Age Gazette*, August 27, 1915, page 399.

†This item includes, in addition to firing up, the amount of coal used in taking the engine to and from the train and the amount used by the engines during the "dead" time.

The interesting items in this table are those showing the evaporation and the total coal burned. In the former there is an increase of 13.1 per cent in favor of the pulverized coal engine and a decrease of 17.9 per cent in the latter item in favor of the same engine notwithstanding the increase of 4.7 per cent in the tonnage hauled, even though the powdered coal was not of the proper dryness for good results. In addition to this saving in the amount of the coal consumed, the fuel used by the powdered coal engine was cheaper in price than that used by the hand-fired engine, it being of the same kind, but of inferior grade.

Three grades of fuel have been experimented with on this locomotive, namely, Illinois and Kentucky screenings and North Dakota lignite. Owing to the experimental nature of the equipment for preparing the coal it was not possible to get as satisfactory results from the Illinois coal as from the Kentucky, the latter containing much less moisture in its natural state than the former. The lignite coal, which came to the road already prepared proved to be entirely successful. Having 47.25 per cent volatile matter it is especially adaptable to this service.

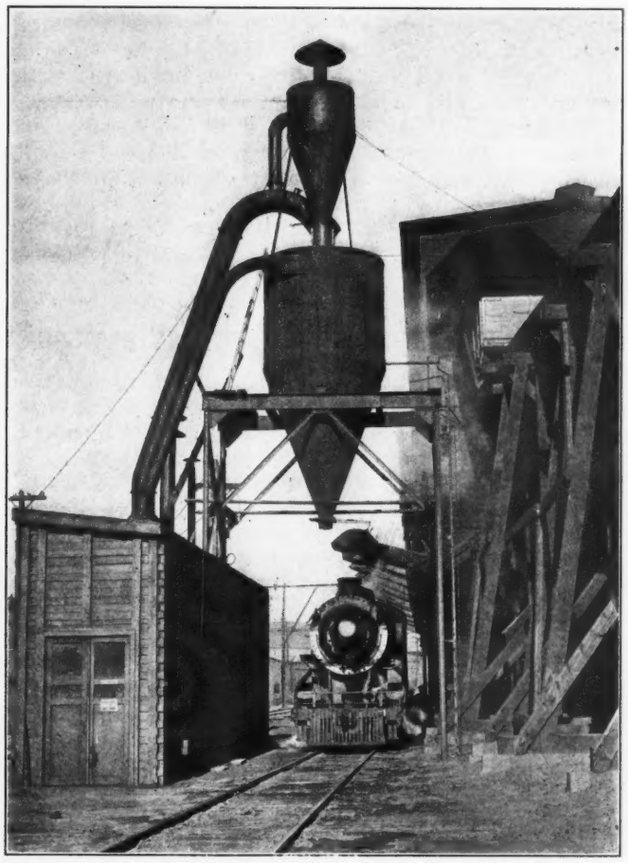


Fig. 5—Pulverizing Shed and Storage Tank at the North Western Coal Chutes

In the preparation of the fuel it is quite necessary, as stated in the early part of this article, to have it of proper fineness and dryness and to keep it well protected from dampness. The drying and pulverizing plant and the storage tank used on the North Western, but which were not installed by the Locomotive Pulverized Fuel Company, are

shown in Fig. 5. The switches which control the pulverizing machinery are located outside of the building in order to prevent any possibility of a fire being caused by the ignition of the coal dust from the sparks that might be made in the operation of the switches. The storage tank has a capacity of 15 tons. At the right of the tank there will be noticed a chain which is used to operate an agitator on the inside of the tank, thus preventing the coal from arching over as it passes into the tank on the locomotive tenders. A canvas chute attached to the bottom of the storage tank, and extending into the tender tank, is used to convey the coal to the tender tank to prevent the coal from blowing away while the tank is being loaded.

In conclusion, it may be said that the results of the experiments on the Chicago & North Western with the pulverized coal-burning locomotive show that there is a distinct field for this type of locomotive. The regulation of the fuel supply to the locomotive and the ease with which the smoke may be controlled and cinders and sparks eliminated, makes it especially adaptable to switching service in addition to the turn-around runs out of terminals. Of course, the advantages enumerated above are offset to a certain extent by the necessity of installing and maintaining the necessary fuel preparing and disbursing facilities. The problem of storing the pulverized fuel in large quantities is also deserving of consideration, but as the use of such fuel becomes more common on the railroads this question should be readily solved. The experimental work done on this locomotive has been under the direct charge of C. W. Corning, chief smoke inspector of the Chicago & North Western, under directions from the office of the superintendent of motive power and machinery.

NEW REGULATIONS FOR RAILWAY MAIL PAY

The provisions of the act of Congress making appropriations for the Postoffice Department for the fiscal year ending June 30, 1917, were briefly reported in the *Railway Age Gazette* last week, page 207. This law, entitled Public No. 169, makes a pamphlet of 23 pages. Following are the provisions in which railway men are particularly interested.

For inland transportation by railroad routes, $59,185,000. To this is added for railway postoffice car service $4,397,000, making a total of $63,582,000. The appropriation to pay freight or expressage on postal cards, stamped envelopes, etc., and empty mail bags is $645,000. Mail clerks, inspectors and all officers of the Postoffice Department must be carried free on any train. Mail clerks go free when traveling to and from duty. No part of the appropriation for postoffice cars may be used for paying for any car which is not sound in material and construction and is kept in good condition, clean, etc.

The sum of $660,000 is appropriated for transportation of mail by electric and cable cars. The rates for electric car service on routes over 20 miles in length, outside of cities, must not exceed the rates on steam railroads. The appropriation for transportation of foreign mails is $3,800,000.

The appropriation for rural carriers is $53,000,000, and there is a provision that "rural mail delivery shall be extended so as to serve, as nearly as practicable, the entire rural population of the United States." The standard rural route for horse-drawn vehicles is 24 miles long, and for motor vehicles 50 miles.

Section 2 repeals the law of August 24, 1912, forbidding the sending of magazines by freight trains; but no publications are to be sent by freight if such method results in unfair discrimination. An aggrieved publisher must complain to the Postoffice Department, and he will be heard; but pending the examination of his complaint the Postoffice will not change its method of transportation. If the Postoffice Department does not satisfy the applicant, he may, within twenty days, appeal to the Court of Appeals of the District of Columbia, and the jurisdiction of this court shall be exclusive.

Section 3 authorizes the Postmaster general to increase the pay of railway carriers 1 per cent, on account of the increased weight of mails, due to the change which was made in the weight limit of parcel post packages on January 1, 1914, and this increase may be applied from January 1, 1914, to the ends of the contract terms.

Section 4 provides a similar increase of one-half of 1 per cent because of the increase in the limit of weight in the first and second zones on August 15, 1913.

Section 5 authorizes the Postmaster general to readjust the compensation to be paid to railroad companies, beginning from June 30, 1916, or as soon thereafter as may be practicable, and then it goes on to enact the provisions for paying by space instead of by weight, as recommended by the Bourne committee, and reported in the *Railway Age Gazette,* September 4, 1914. A standard postoffice car is 60 ft. long. Apartment cars are either 15 ft. or 30 ft. long, and storage cars 60 ft. Closed pouches are to be paid for according to the linear feet occupied in cars, either 3 ft. or 7 ft. For a full 60-ft. car, the rate is to be 21 cents a mile (all these rates have the proviso "not exceeding"), and for each one-way trip, $4.25 as a combined initial and terminal rate. Apartment cars, 11 cents a mile for 30-ft. and 6 cents a mile for 15-ft., with a terminal rate of $2.75 for 30-ft. and $2 for 15-ft. For closed pouches, 1¼ cents a mile for the 3-ft. length, and 3 cents a mile for the 7-ft. length; terminal rate, 25 cents for 3-ft. and 50 cents for 7-ft. On land grant railroads all payments are to be 80 per cent of the regular rates. The allowance for cars may be varied in accordance with the approximate differences in their respective cost of construction and maintenance. In computing the car miles for postoffice cars the maximum space authorized in either direction of a round trip shall be regarded as the space in both directions, unless otherwise mutually agreed upon; and this rule applies also in the case of storage cars, unless the car is used by the company in the return movement, or otherwise there is a mutual agreement.

The Postmaster general may make special contracts with the railroads, where necessary, at higher rates, but must in such cases report to Congress and give his reasons.

All cars or parts of cars must be approved by the Postmaster general in regard to construction, style, length, etc. No pay shall be allowed for a wooden car which is not fully approved, nor for such a car run between adjoining steel cars, or between the engine and a steel car. From July 1, 1917, no full postoffice car shall be used unless it be of steel or steel underframe; and all full postoffice cars hereafter built must be steel. Until July 1, 1917, the Postmaster general may, if necessary, allow the use of wooden cars, but at a compensation reduced according to their inferior character of construction.

If a railroad company fails or refuses to comply with the Postmaster general's wishes in these matters, it may be fined a reasonable sum. The Postmaster general shall decide upon what trains and in what manner the mail shall be conveyed. Every railroad must carry on any train it operates and with due speed, all mailable matter, equipment and supplies; failure or refusal may be punished by fine. The Postmaster general may make a deduction from the pay for reduction in the service or for infrequency of service, and may impose fines for delinquencies. Where the failure of service is due to a fault of the railroad company, he may impose a fine of three times the value of the service that is omitted.

Where mail is sent by freight it shall be carried at rates not exceeding the usual just freight rates. The Postmaster general shall from time to time request information from the Interstate Commerce Commission as to railroad revenue on express matter, and may arrange for the transportation of

mail matter at such rates; and it shall be the duty of the railroad to carry the mails as thus required. He may apply to the Interstate Commerce Commission for the determination of a carload or a less-than-carload rate for postal matter of the fourth class and periodicals, and it shall be the duty of the railroads to provide and perform the service required at the rates prescribed.

The Postmaster general may despatch third and fourth class mail and periodicals less frequently than other mail matter, if, by so doing, he can secure lower rates, without detriment to the service. Postal cards, stamped envelopes, supplies, etc., may be carried in the mails when there is space which is paid for and is not needed for more important matter.

The Postmaster general may have the mails weighed at such times as he may elect, paying the expense thereof out of the appropriation for inland transportation.

"Pending the decision of the Interstate Commerce Commission, as hereinafter provided for, the existing method and rates of railway mail pay shall remain in effect, except on such routes or systems as the Postmaster general shall select, and to the extent he may find it practicable and necessary to place upon the space system of pay in the manner and at the rates provided in this section, with the consent and approval of the Interstate Commerce Commission, in order to properly present to the Interstate Commerce Commission the matters hereinafter referred thereto: *Provided,* That if the final decision of the Interstate Commerce Commission shall be adverse to the space system, and if the rates established by it under whatever method or system is adopted shall be greater or less than the rates under this section, the Postmaster general shall readjust the compensation of the carriers on such selected routes in accordance therewith, from the dates on which the rates named in this section became effective.

"All railway common carriers are hereby required to transport such mail matter as may be offered for transportation by the United States in the manner, under the conditions, and with the service prescribed by the Postmaster general and shall be entitled to receive fair and reasonable compensation for such transportation and for the service connected therewith.

"The Interstate Commerce Commission is hereby empowered and directed as soon as practicable to fix and determine from time to time the fair and reasonable rates and compensation for the transportation of such mail matter by railway common carriers and the service connected therewith, prescribing the method or methods by weight, or space, or both, or otherwise, for ascertaining such rate or compensation, and to publish the same, and orders so made and published shall continue in force until changed by the commission after due notice and hearing.

"In fixing and determining the fair and reasonable rates for such service the commission shall consider the relation existing between the railroads as public service corporations and the Government, and the nature of such service as distinguished, if there be a distinction, from the ordinary transportation business of the railroads.

"The procedure for the ascertainment of said rates and compensation shall be as follows:

"Within three months from and after the approval of this act, or as soon thereafter as may be practicable, the Postmaster general shall file with the commission a statement showing the transportation required of all railway common carriers, including the number, equipment, size and construction of the cars necessary for the transaction of the business; the character and speed of the trains which are to carry the various kinds of mail; the service, both terminal and en route, which the carriers are to render; and all other information which may be material to the inquiry, but such other information may be filed at any time in the discretion of the commission.

"The Postmaster general is authorized to employ such clerical and other assistance as shall be necessary to carry out the provisions of this section, and to rent quarters in Washington, District of Columbia, if necessary, for the clerical force engaged thereon, and to pay for the same out of the appropriation for inland transportation by railroad routes. The Postmaster general shall file with the commission a comprehensive plan for the transportation of the mails on said railways and shall embody therein what he believes to be the reasonable rate or compensation the said railway carriers should receive.

"Thereupon the commission shall give notice of not less than thirty days to each carrier so required to transport mail and render service, and upon a day to be fixed by the commission, not later than thirty days after the expiration of the notice herein required, each of said carriers shall make answer and the commission shall proceed with the hearing as now provided by law for other hearings between carriers and shippers or associations.

"All the provisions of the law for taking testimony, securing evidence, penalties and procedure are hereby made applicable.

"For the purpose of determining and fixing rates or compensation hereunder the commission is authorized to make such classification of carriers as may be just and reasonable and, where just and equitable, fix general rates applicable to all carriers in the same classification.

"Pending such hearings, and the final determination of the question, if the Interstate Commerce Commission shall determine that it is necessary or advisable, in order to carry out the provisions of this section, to have additional and more frequent weighing of the mails for statistical purposes, the Postmaster general, upon request of the commission, shall provide therefor in the manner now prescribed by law, but such weighing need not be for more than thirty days.

"At the conclusion of the hearing the commission shall establish by order a fair, reasonable rate or compensation to be received, at such stated times as may be named in the order, for the transportation of mail matter and the service connected therewith, and during the continuance of the order the Postmaster general shall pay the carrier from the appropriation herein made such rate or compensation.

"Either the Postmaster general or any such carrier may at any time after the lapse of six months from the entry of the order assailed apply for a re-examination, and thereupon substantially similar proceedings shall be had with respect to the rate or rates for service covered by said application, provided said carrier or carriers have an interest therein.

"For the purposes of this section the Interstate Commerce Commission is hereby vested with all the powers which it is now authorized by law to exercise in the investigation and ascertainment of the justness and reasonableness of freight, passenger and express rates to be paid by private shippers.

"The Interstate Commerce Commission shall allow to land grant railroad companies only 80 per cent of the compensation paid other railroads . . . .

"The existing law for the determination of mail pay, except as herein modified, shall continue in effect until the Interstate Commerce Commission under the provisions hereof fixes the fair, reasonable rate or compensation for such transportation and service.

"That the appropriation for inland transportation by railroad routes and for railway postoffice car service for the fiscal year ending June 30, 1917, are hereby made available for the purposes of this section.

"That it shall be unlawful for any railroad company to refuse to perform mail service at the rates or methods of compensation provided by law when required by the Postmaster general so to do, and for such offense shall be fined $1,000. Each day of refusal shall constitute a separate offense.

"Section 6. If the Postmaster general shall find on experi-

ence that the classification of articles mailable, as well as the weight limit, or the rates of postage, zone or zones, and other conditions of mailability, under Section 8 of the act approved August 24, 1912, or any of them, are such as to prevent the shipment of articles desirable, or to permanently render the cost of the service greater than the receipts of the revenue therefrom, he is hereby authorized to re-form from time to time such classification, weight limit, rates, zone or zones, or conditions, or either, in order to promote the service to the public or to insure the receipt of revenue from such service adequate to pay the cost thereof: *Provided, however,* That before any change is hereafter made in weight limit, rates of postage, or zone or zones, by the Postmaster general, the proposed change shall be approved by the Interstate Commerce Commission after thorough and independent consideration by that body in such manner as it may determine."

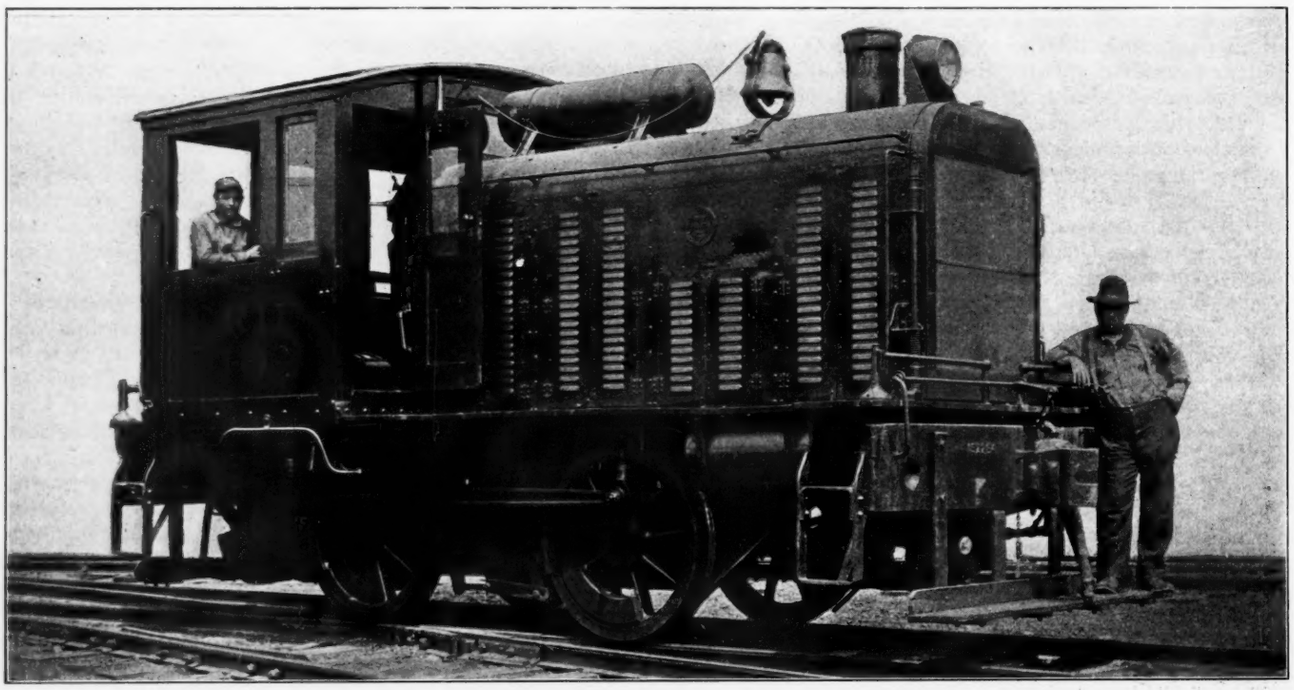
GASOLENE SWITCHING LOCOMOTIVE FOR THE ERIE

The Erie Railroad has adopted a unique plan for taking care of its business in the vicinity of its Erie street freight station in the city of Chicago. This station is located on the north branch of the Chicago river and has no direct rail connection with the freight terminal located on the south branch of the river, at Fourteenth and Clark streets. The cars billed to the Erie street station are placed on barges and towed up the river to that point, which is one of several along the Chicago river, and they are taken from the barge by a gasolene locomotive which has a capacity for hauling 500 tons. This locomotive distributes the cars to the team and house tracks for loading and unloading. Previously the cars were loaded and unloaded directly from the barge, which necessitated considerable rehandling of the freight and greatly reduced the capacity of the station. The team tracks will accommodate 19 cars, the freighthouse 10 cars and the storage tracks 8 cars. There are also provisions made for interchanging cars with both the Chicago, Milwaukee & St. Paul and the Chicago & North Western, which serve industries located in the immediate vicinity of this station. This permits the transferring of cars billed to these industries directly to those roads, and eliminates the delays which were previously caused in interchanging such cars at the Clearing yards and sending them around the Belt to this point. The cars are now delivered on the day of arrival and a whole day is saved thereby.

The engine was built by the Baldwin Locomotive Works, and is of the following general dimensions:

Weight in working order	44,000 lb.
Wheel base, driving	6 ft. 6 in.
Length over all	18 ft. 8 in.
Number of cylinders	4
Cylinders, diameter and stroke	9 in. by 16 in.
Driving wheels, diameter	42 in.

The engine is equipped with the Kingston carburetor. It has both the magneto and battery ignition, has two speeds, 3½ and 8 miles per hour, chain drive, the Hele-Shaw multiple disc type clutches for the main clutch and jaw clutches for the transmission clutch. The capacity of the gasolene tank is 35 gal. The locomotive is supplied with a bell, whistle, electric self-starter, headlight, automatic couplers in front and rear, Westinghouse air brake and the safety appliances prescribed by the Interstate Commerce Commission for switching locomotives, modified to suit the special construction of this engine. The improvement work done at this freight station is to be duplicated at other river stations operated by the Erie company in Chicago.



Gasolene Switching Locomotive Used by the Erie Railroad at a Local Chicago Freight Station

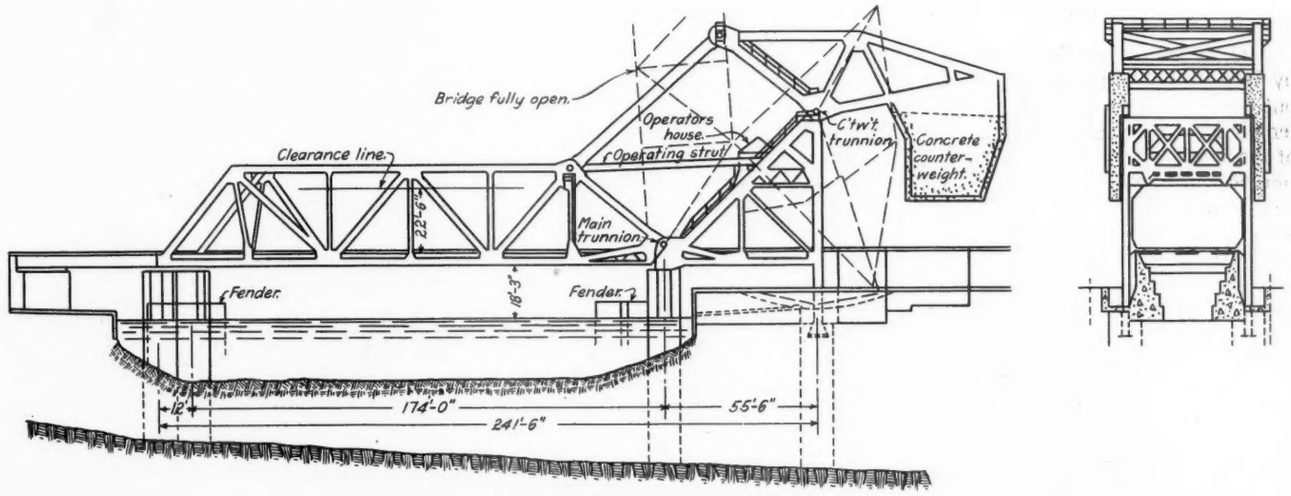
AUSTRALIAN RAILWAY STRIKE.—In the early part of July, owing to a strike by 40 clerks at Port Augusta, 1,450 persons employed on the eastern section of the trans-continental line were idle.

THE CHANNEL TUNNEL.—A meeting of the Channel Tunnel Committee was held on July 12 at the House of Commons. The chairman, Arthur Fell, giving an account of a recent visit to Paris, said that he was assured by M. Sartiaux, the chief engineer of the Northern Railway of France, that, if sanctioned by the British Government, the tunnel would be built in five years. Had it existed during the war they could have transported 30,000 troops and 30,000 tons of material per day.

New Three-Track Bascule Bridge at Chicago

Structure Is Placed in Service According to Program On July 30 When Old Span on Same Site Is Removed

ON Sunday, July 30, the Chicago & North Western placed a three-track Strauss bascule bridge of the heel trunnion type in service over the north branch of the Chicago river, replacing a two-track swing span at the same location. The bridge is on the main line of the Milwaukee division of the North Western and carries a heavy passenger traffic, bridge and ½ mile south to Clybourn Junction. The middle track of the three-track line is used for high-speed traffic, southbound in the morning and northbound in the evening. The disadvantage of this arrangement arose from the fact that the crossovers north of the bridge were so close to the Deering station, just north of the bridge, that local trains



Elevation and End Section

consisting very largely of "North Shore" suburban trains, the freight traffic being limited to local freight and switching movements.

The new bridge was built to provide more adequately for the increased train loads and to permit the extension of the third main track across the bridge from the north. Previous to the completion of the bridge there were three main tracks between Evanston and the north end of the bridge where crossovers, controlled by the bridge interlocking, provided for the reduction to two main tracks extending across the stopping at the station stood inside the derails. In consequence a train on the middle track could not cross the bridge while a local train moving in the same direction stood at the station. With the completion of the new structure, the third main track is carried across the bridge with crossover connections to the two-track line a sufficient distance south to avoid this difficulty.

The Bridge in the Closed Position

Although occupying the same site as the old structure, the new bridge was built without interruption to traffic. However, the removal of the old bridge to permit the closing of

the new one and the track changes required to replace a two-track line by a three-track line as well as to provide a raise of grade of 2 ft. across the bridge, proved to be a rather complicated problem and to carry out the changes which this involved required an interruption to the traffic across the bridge for a considerable period. This did not prove a serious matter as all trains running north of Evanston were routed between that point and Clybourn Junction over the Wisconsin division and the Mayfair cutoff, a route used regularly by through freight trains and some through passenger trains. The local traffic for stations between Evanston and Deering is comparatively light on Sunday and the interruption of the direct service did not result in any material inconvenience.

The Superstructure

The crossing is on skew, departing from the perpendicular by 16 deg. The trunnion pier is at a right angle to the track, but the rest pier is parallel to the channel, making the span length for the longer truss 186 ft. between bearings and that of the shorter one 174 ft. The structure conforms to the usual practice as developed for bascule bridges of this type. The span consists of two sub-panel Warren trusses spaced 45 ft. center to center and carrying the three tracks between them, an arrangement that necessitates heavy floor beams. Owing to the greater depth of floor beams required and the necessity of maintaining the same underclearance that was obtained in the old structure, it was necessary to make a 2-ft. raise of grade across the bridge. The counterweight truss is

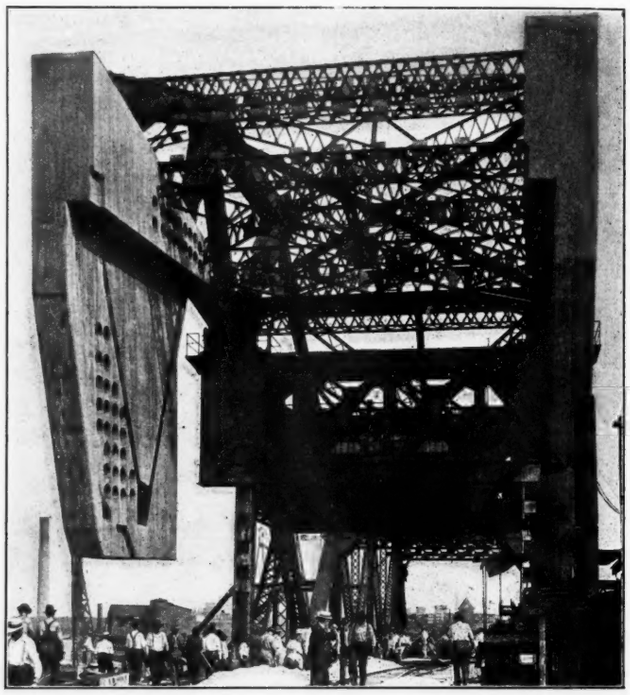
Old Swing Span Cut in Two to Clear Bascule Span

supported on a tower consisting of two triangular frames with the vertical load of the counterweight trunnions supported on columns located 55 ft. 6 in. to the rear of the main trunnions. There is an approach span of 35 ft. at the trunnion or the south end of the bridge, and one of 56 ft. 4 in. at the north end.

The superstructure contains 1,263 tons of structural steel of which 965 tons is in the lift span, the counterweight trusses and links and the operating struts, 380 tons in the counterweight tower, and 80 tons in the north approach. The machinery and trunnions weigh 128 tons. The largest trunnions are those which carry the counterweight trusses and are 26 in. in diameter by 8 ft. 5 in. long.

The bridge is operated by two 150-hp. electric motors, operating in parallel on the same train of gears. The motors will normally be used together, although one motor can be used alone to operate the bridge at a low speed. A 50-hp. gas engine is also installed to serve as an auxiliary source of power in case of a failure of current.

The bridge opens to nearly vertical (87 deg.) and was erected



The Bridge from the Rear Showing Counterweights

in that position. As trains were operated on a two-track line through the counterweight tower without interruption it was necessary to provide counterweights which would not foul the clearance when the bridge is in the open position. In consequence these counterweights were given the form of great leaves, one on each side and of relatively small thickness and were designed to pass entirely outside of the counterweight tower when the bridge is open. The two counterweights contain 14,400 cu. ft. of concrete and weigh 1,180 tons.

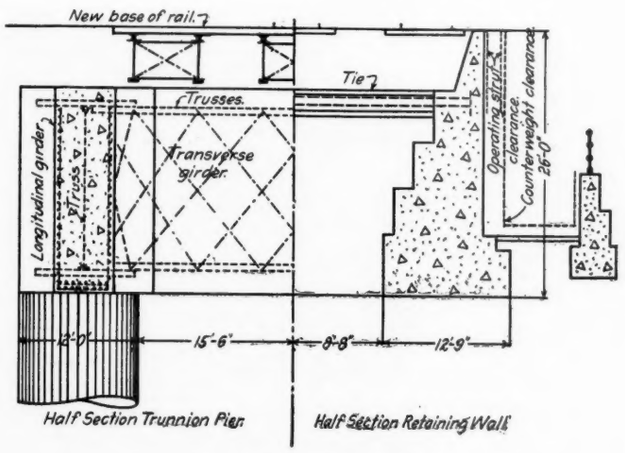
An electric interlocking system controlling the movements of trains over the bridge as well as through the junction of the two-track line with the three-track line, will be provided to take the place of the interlocking plant that was in use in connection with the old bridge. Owing to the extensive track changes, this plant will need to be almost entirely re-built and the work has not yet been completed.

The Substructure

The substructure at the trunnion end of the bridge consists of four concrete cylinders, one under each main trunnion and one each under the columns of the counterweight tower which take the vertical reactions of the counterweight trunnions. These cylinders are united in a rigid frame by two transverse and two longitudinal reinforced concrete girders constructed monolithic with the tops of the cylinders.

The size of these girders is unusual. The one connecting the two cylinders under the main trunnions is 8 ft. wide by 19 ft. 3 in. deep and is reinforced with two lattice trusses

16 ft. deep in addition to a large number of 1¼-in. bars in the bottoms and sides. The two longitudinal girders are 6 ft. wide by 19 ft. 3 in. deep and the rear transverse girder is 6 ft. wide by 21 ft. deep. The rest pier consists of two cylinders united by a reinforced concrete girder of a construction similar to those at the trunnion end of the bridge. The approach span on the north end is supported at its outer end on a simple low abutment set in the embankment. The south approach span has its outer ends supported on an abutment which is located almost in the center of the rectangle formed by the four girders connecting the cylinder piers, this abutment being built entirely independent of the pier structure.



Cross Sections of the Substructure

The cylinder piers are carried to rock which dips from north to south, being about 43 ft. below datum (waterlevel) at the rest piers and about 54 ft. below datum at the trunnion piers. The soil above the rock is largely a stiff clay and the abutments and retaining walls, also forming a part of the substructure, were founded on the clay subsoil at a considerable elevation above the bed of the river.

For a distance of about 47 ft. to the rear of the counterweight trunnion piers, the embankment is supported between retaining walls of a semi-reinforced concrete type, tied together at intervals of 6 ft. by ties, each consisting of two 1¾-in. diameter rods and five ¾-in. reinforcing bars incased in a rib of concrete 1 ft. by 2 ft. in section. As the extreme limits of the counterweights extend about 19 ft. below the base of rail when the bridge is open, it was necessary to provide pits on either side of the substructure to receive the counterweights. Owing to the weight of these counterweights and the great depth necessary because of their relatively small thickness, it was necessary to work with minimum clearances between the counterweights and the rear legs of the tower. For this reason the rear tower columns had to be carried below the level of the bottoms of the counterweight pits incasing them in the concrete of the substructure below the rail level.

The operating struts, which are 70 ft. long, extend below the track level for a considerable distance when the bridge is open. These struts are located in planes so close to the outside tracks that they did not allow room for a walk of a safe width at the points where the struts extended below the track level. This difficulty was overcome by providing a movable walk which drops out of the way when the bridge is being raised.

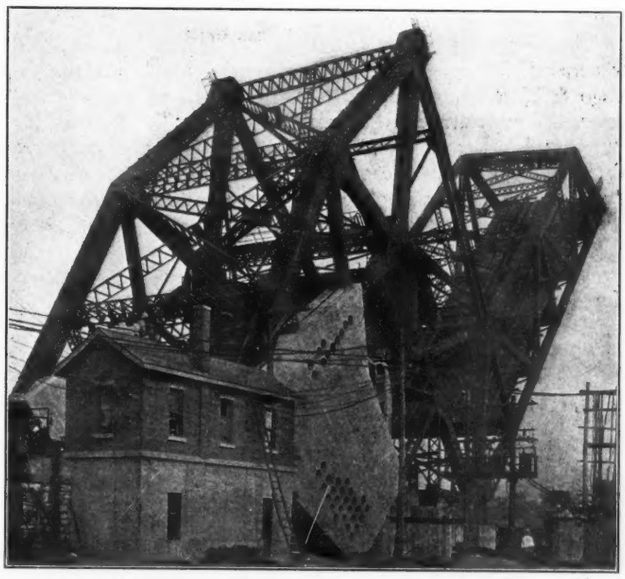
The six cylinder piers were sunk according to the methods used in the pneumatic process, except that compressed air was not necessary. Cylinders 12 ft. in diameter made of ⅜-in. steel in 8-ft. vertical sections, with 8-ft. working chambers at the bottom and vertical shafts 3 ft. in diameter in the center were sunk by excavation carried on in the working chambers and the weight of the concrete loaded into the cylinders. The steel cylinders were handled and the excavation was removed by means of head frames erected over the site of each pier. The concrete was mixed and hoisted by a floating concrete plant.

Placing the New Bridge in Service

After all erection work that did not interfere with traffic had been finished, there still remained certain definite operations which had to be completed before the new bridge could be placed in service and which could not be carried out without interrupting traffic. These changes may be summarized as follows: the removal of the old span to a sufficient extent to clear the new one, the erection of the approach spans, the erection of those portions of the new span that would have interfered with traffic, and the track changes.

The most important step was the removal of a sufficient portion of the old span to permit closing of the new one, and was accomplished by swinging the old span to the open position and cutting out a sufficient length of the trusses and floor system directly over the pivot pier to clear the new span.

To permit its erection without fouling the old span the new one was located with its south end about 10 ft. south of that of the old span, and in the nearly full open position. In this position it could be erected complete, except for the



Closing the Bridge for the First Time

panel of the floor system nearest the trunnion end and the panel of the lateral bracing at the end of the counterweight. These had to be left off to afford the necessary clearance for the operation of trains during erection.

Because the ends of the new and old spans did not coincide, the approach span at the north end could not be erected until the old span had been eliminated, and while this condition did not interfere with the erection of the approach spans at the south end, they could not be placed in position without interfering with traffic because of the two-foot raise of grade.

The change from two tracks to three tracks with a raise of grade of 2 ft. was an item that required considerable time, and did not permit of very much work in advance, because it was necessary to keep at least one track in operation at the old grade until the time that the change in structures was made. By taking the south track out of service some time in advance it had been possible to put in the new south track on the approaches at the new grade. The center track was

also laid, but could not be lined or surfaced because of interference with the operated west track. The work on the center track therefore had to be delayed until the west track could be thrown to its new position, 6½ ft. further west. No changes could be made in the cross-overs until train service was interrupted.

Work on the change commenced at 12:30 a. m. Sunday, July 31, when the bridge was closed to traffic. The old span was swung out onto to protection piers and blocked up on falsework. Oxy-acetylene flames were then used to cut apart the members which were lifted onto barges by a marine derrick. The two end portions of the span which were clear of the new bridge were left in position on the blocking to be removed later. The obstructing portion was out of the way by 7:45 a. m.

While this work was in progress, derrick cars belonging to the railroad, placed the approach spans and this work being completed, two derrick cars belonging to the steel erection contractor placed the remaining portion of the lateral bracing of the counterweight trusses. When this work was completed at 9:45 a. m. the span was lowered.

The placing of the panel of the floor system and the deck for the same, the lining of the track and the placing of guard rails and tie plates completed the work on the span. The track changes on the approaches involved by far the greatest amount of work and time, and were not completed until shortly before 6 p. m. (Sunday), when the first train was passed over the bridge.

The design and construction of this bridge was under the general direction of W. H. Finley, chief engineer of the Chicago & North Western, with H. M. Spahr as resident engineer, the superstructure being designed by the Strauss Bascule Bridge Company, Chicago. The Great Lakes Dredge & Dock Company, Chicago, had the contract for the substructure and the removal of the old span. The superstructure was fabricated by the American Bridge Company and erected by the Kelley-Atkinson Company, Chicago, except the approach spans, which were erected by the railway company forces.

WESTERN PACIFIC TRAIN RULES

The Western Pacific Railroad Company, successor to the Western Pacific Railway Company, took possession of that property on July 14; and on Sunday, July 16, a revised edition of the standard code of train rules went into effect. The train rules proper—numbers 1 to 108 and 201 to 223 inclusive—contain no radical changes, as compared with the former code or with the American Railway Association's standard; but there are numerous interesting details in which the officers have embodied their individual views. Harry W. Forman, the well-known former train rule examiner of the Nashville, Chattanooga & St. Louis, is now inspector of transportation on the Western Pacific; and evidences of his work appear in numerous places in these rules.

There is a separate chapter relating to the use of the telephone in train despatching, rules 250 to 257. The book contains numbers 605 to 686 of the Standard Interlocking Rules, but no block signal rules. The "General Regulations," so called, are numbers 700 to 932 inclusive.

Under the "General Rules," paragraph F has added a sentence requiring all trains to be fully protected when necesssary. A new paragraph, paragraph I, forbids the reading of books or newspapers by trainmen, enginemen and train despatchers while on duty. The definition of an extra train is amplified to include five different terms. The word "Caution" is among the definitions; it means "the movement of a train under such control that the engineman can stop within his range of vision," and the phrase "under control" is not used in the book.

Rules 2 and 3, relating to watches, are amplified. Watches are inspected in January, April, July and October. Rule 4 is followed by rules 4a and 4b, providing for getting acknowledgments of new tables and describing precautions that are to be taken by men who have been on vacation. A two-page appendix to the book contains a half dozen examples showing the application of Rule 4.

Rule 6 is supplemented by rule 6a which includes signs for day and night offices with and without telephones, etc. Rule 11 makes separate and different provision for red and yellow fusees. Rule 11a contains additional precautions relating to fusees. Rule 14 requires the sound of the whistle to be "accurate." The torpedo rule, No. 15, like that concerning fusees, is amplified by provisions against carelessness. Rules 17 and 24 are amplified in the same way. In the last named rule the flagman is not required to stand on the *end* of the car.

Rule 33 requires the use of green signals at highway crossings to stop traffic on the highway.

Rule 83a requires all trains to have clearance cards, and No. 84a forbids the engineman of a freight train to go through a station without receiving a proceed signal from the rear end, except when weather conditions prevent such signals from being seen. Enginemen are required to obtain a proceed signal from the trainmen after leaving a siding. Rule 86 prescribes a time interval of ten minutes. This rule appears without the confusing clause requiring an inferior train to clear the track for a following superior when the following train is due to leave the next station in the rear. Rules 90a and 90b require the superior train to take the siding when that course will save time. Rule 91a requires the train order signal to be kept at stop for ten minutes after the departure of each train carrying passengers. Rule 98a requires trains to stop before crossing another railroad where there is no interlocking; and if there is not a good view, one of the trainmen must go forward and give the signal to proceed, when it is safe to do so; and then the engineman must sound his whistle before starting. Under rule 99 a flagman "must not allow a train which he must stop to pass him, without having placed one torpedo on the rail."

Rule 104, requiring care in the use of switches, is supplemented by 104a, containing about two pages of additional details concerning this work. At stations agents are responsible for the proper position of the switches. Rule 106a describes in detail the management of trains standing on highway crossings.

One paragraph of rule 104a says that in case a part of the wheels of a car, an engine or a train be run through a rigid split switch, the entire movement must be continued; for to set back would derail some of the wheels.

Rule 206 requires the time to be stated in words and figures, except as otherwise illustrated by the train order examples. In this rule the paragraph referring to the telephone is omitted, a separate code of rules—250 to 257—being provided for use with the telephone. Rules 210 and 211 require each operator to observe the *first* repetition and at once call attention to any discrepancy. Orders on form 31 may be delivered to the engineman by the operator, the conductor or a brakeman. Form 19 may be delivered to the engineman by the conductor or a brakeman.

Following rule 211, there is a note reading:

> The "19" form of train order must not be used to restrict a superior train for an opposing inferior train, nor to meet extras, unless sent to the operator at the meeting or waiting station, and issued for all trains concerned before reaching such station.

When a train order affects a train at his station, an operator must not deliver it until the train has stopped. Clearance cards must be delivered by all operators with all orders, the card to show the number of each order. Each engineman must receive copies of all train orders, but only

the engine by which the train is designated need be referred to in train orders.

Rule 221 requires the train-order signal to be left clear when there are no orders. This rule requires conductors and enginemen, if practicable, to observe train-order signals, even when the operator is absent and the lights are not burning. If, under such circumstances, the signal should indicate stop, the train is to be governed accordingly.

The telephone rules are taken up largely with instructions how to proceed with train orders which have to be relayed for trains that are at points where no operator is on duty. An order on form 31 must not be made complete until the conductor and the engineman of the train addressed have signed their names to it.

The forms of train orders in this book show a dozen changes in detail, as compared with the association standard, including an additional form "Q-a" for use in taking receipts for new time tables. The fourth example under form B reads, "Extra 95 west run ahead of No. 3 B until overtaken"; and the note beneath says that if No. 3 should consist of sections the order is fulfilled when extra 95 is overtaken by the first section.

The clearance card, form A, makes no reference to the reason why the signal is set at stop.

On forms 31 and 19 two lines are allowed for the address.

Rule 663 requires that when, within interlocking limits, a train proceeds on a hand signal, a flagman must be sent ahead, and he must make such inspection as the circumstances require.

The "General Regulations," beginning with No. 700, contain numerous phrases which are suggestive to anyone preparing a code of this kind. "Employees should cultivate a graciousness of manner, not only in dealing with the public but also with fellow employees." Employees who are careless, dishonest, etc., "must not expect" to be retained in the service.

Rule 728.—This rule, providing for the safe movement of trains over defective tracks, says that train orders issued for this purpose must be delivered to trains each trip or daily. The orders should not contain the words "until further notice."

Passenger trainmen are to "frequently look through cars to see if any service is required for the comfort of passengers or warning for their safety." Station agents are not to permit billboards to be erected in such a position as to prevent a clear view of approaching trains.

Rule 804.—Where several operators are on duty at the same time, but one will be permitted to handle train orders and clear trains.

Rule 826 forbids giving hand signals with a red and a white lantern held in the same hand.

A NEW ORE DOCK FOR THE SOO AT ASHLAND, WIS.

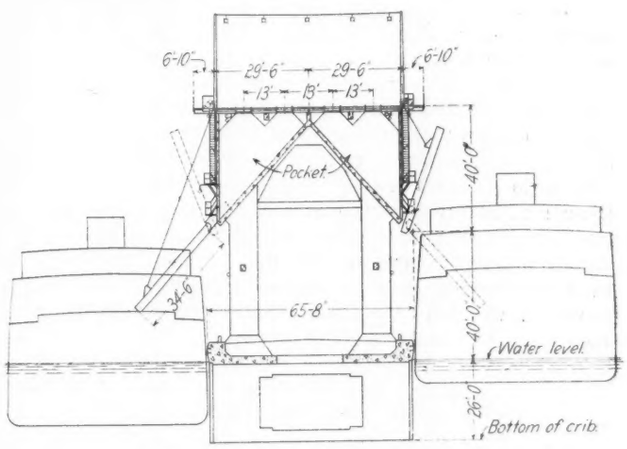
The Minneapolis, St. Paul & Sault Ste. Marie has awarded contracts for a reinforced concrete ore dock to be built at Ashland, Wis., which will have a total capacity of 60,000 tons. The structure will have a storage length of 900 ft. and will carry four tracks at an elevation of 80 ft. above water level. Access to the dock will be by means of a two-track approach consisting of 1,000 ft. of timber trestle and 160 ft. of reinforced concrete viaduct composed of four spans of 40 ft. each. Including a dock head of 75 ft., the reinforced concrete portion of the structure will have a total length of 1,132 ft.

The dock will consist of a concrete trestle of 75 bays of 12 ft. each with bents between each two bays, consisting of two concrete columns 42 ft. 3 in. center to center which will carry a track floor 59 ft. wide and two triangular bins or pockets, each having a capacity of seven cars of ore. The structure will be supported on a continuous concrete footing to be carried on piles enclosed by a timber crib. The present depth of channel at the old dock is 22 ft., but with the new crib, extending 26 ft. below water level, the depth can be increased to 24 ft.

The pockets will have a circular front which, on the Great Northern and Northern Pacific docks were made of steel plates. For this dock they will be made of reinforced concrete. These curved fronts have the advantage of enabling the ore to run more freely than square ones.

Each pocket will have an opening at the lower part, provided with a door of the Dickerson self-closing type, permitting a pocket of ore to be either emptied entirely or cut off at will. To this opening is attached a 34-ft. steel chute of the type first used on the Great Northern dock No. 4 at Allouez bay, and which is raised and lowered by an electric hoist. These hoists are arranged in groups of 10 and connected with a line shaft which in turn is geared to a 25 hp. motor. The speed of the hoist is such that a chute can be lowered or raised in 32 sec. The operator will stand at the outer end of the platform and where he will have full control of the movements of the chutes.

The upper deck will be lighted by 15 rows of 5 200-watt



Cross Section Through the Dock

lights, suspended on wire cables running across the dock between 30-ft. steel poles, so that the deck between cars will be lighted without casting any shadows. Platforms and stairs will be provided on each side to give easy access to the lower platforms at the door openings of the pockets. These will be thoroughly lighted, as well as the pockets.

There are about 30 ore docks on the Great Lakes, all built of timber with the exception of 7, which were constructed of concrete and steel. The new dock to be built at Ashland will differ from the reinforced concrete dock at Marquette, Mich., in that it will be provided with expansion joints at intervals of 120 ft., whereas the dock at Marquette is not provided with expansion joints.

The approximate quantities for the Ashland dock are 280,000 cu. yds. of excavation for the dock and slips; 6,880 piles, 1,850,000 ft. B.M. of lumber for the cribbing, 1,700 tons of structural steel and chutes, and 28,570 cu. yd. of concrete. The dock was designed by the Toltz Engineering Company, consulting engineers, St. Paul, Minn., under the direction of C. N. Kalk, chief engineer of the Minneapolis, St. Paul & Sault Ste. Marie. Foley Brothers, Peppard and Fulton, St. Paul, have the general contract for the substructure and the concrete work, and the Minneapolis Steel & Machinery Company, Minneapolis, has the contract for the structural steel.

HOW I GOT CUSTOMERS TO SEE MY SIDE*

By Edward P. Ripley
President, Atchison, Topeka & Santa Fe

While on an inspection trip over the Santa Fe lines in 1910, I stopped at a small stream in Kansas to examine a bridge. A farmer plowing in a nearby cane field came over to the right-of-way, and we engaged in conversation.

He asked several questions regarding railroad operation, and I answered him frankly. After penciling some notes on the back of an envelope, he remarked: "If railroad men would go to the people with their story, there would be less prejudice against their system of doing business. The people want both sides of every case in which they are interested, but for some reason they have never heard the railroad side of the transportation problem."

This statement quite accurately describes an important phase of the relations between the railroads and some other types of business activities which come equally close to the people's lives, too, and the public. Prejudice against the American railways is due largely to the work of a certain type of politician who has given the people an erronenous impression of the business of transportation. These politicians, like most other ordinary mortals, always have followed the lines of least resistance. Casting about some years ago for a "paramount issue," they fell upon the railroads as the least likely to reply when attacked. And they made a good guess.

It was a sort of unwritten law among railroad men to "decline to be interviewed." The result was that in a short while all classes and conditions of politicians were hammering the railroads from Maine to lower California, and from Portland to Tallahassee.

The smartest politician was the one who could tell the biggest yarn about the railroads, and, as the railroads did not "come back," the people naturally believed that the things told to them were true. Candidates invented the most terrible wrongs on which to ride into office, and once in office of course they had to make good by righting the "wrongs" so vigorously exploited during their campaigns.

It must be admitted that there was a foundation for some of the criticisms, but the railroad business had been conducted on quite as high a plane as that of other interests. The situation went from bad to worse until the railway industry of the country was threatened with annihilation. Receiverships were common, and government ownership was seriously suggested as the solution to the problem. Government ownership, for that matter, still is under discussion, but as people study the subject the sentiment favoring it seems to decline.

About five years ago the men who were responsible for the management of railway properties began to sit up and take notice, however. They saw that the old-fashioned methods of trusting to luck for public sentiment, and relying upon lobbyists to look after their affairs in Congress and in the legislatures, had failed dismally. An effort was made, therefore, to find a new remedy for the trouble.

In the case of the Santa Fe, for example, that farmer I met on the right-of-way when I stopped to inspect the bridge, gave me an idea. Upon my return to Chicago, I called a conference of my fellow officials of the several departments of our railway, and expressed to them the opinion that the hostile public sentiment against transportation corporations would abate to a considerable degree if the people could get a better understanding of the railway situation.

I also expressed the opinion that those of us who manage the railroads did not take sufficient time to familiarize ourselves with the troubles confronting the people. I asked for the co-operation of all departments in the inauguration of a campaign for the purpose of bringing our officials and patrons into a closer relationship, with the view of changing this feeling of hostility into one of friendliness.

As everybody in our official family long had felt the need of measures to overcome the prejudice against our business, the plan I suggested at the conference met with hearty favor. In brief, it required that general managers, general freight and passenger agents, financial and accounting officials, attorneys and others, in addition to the division officers, visit the cities and rural communities along our lines, and get better acquainted with merchants, manufacturers, farmers, stockmen, bankers and every other class of people doing business with the company, and ascertain the causes of their discontent with the railroads. In other words, we would adopt the suggestion of my farmer friend who had discussed conditions with me on the right-of-way that day—tell our story to the people, and also ask them to tell theirs to us.

The plan was put into effect at once, officials working out the details as the needs of the campaign developed. In a few months we had a program in successful operation, and there has been but little change made in it.

One week in every month half a dozen or more officials are drafted for a trip over a division—sometimes two divisions. A short train is made up for the accomodation of the party, and a town-to-town tour conducted, stops being made long enough at every place to enable our people to meet the business men and farmers in a convenient room, usually the commercial club, court house or city hall. The meetings are informal—a sort of hand-shaking affair, with a bit of speech-making occasionally.

In Santa Fe territory such a gathering is known as a "harmony" meeting, a Kansas newspaper reporter having given it the name that sticks. I suppose it was so called because our officials make it plain to the citizens assembled at these meetings that if there is anything out of gear in the community, so far as the Santa Fe is concerned, they want to know it.

The value of meetings of this type is in the heart-to-heart talk indulged in by two elements of the public having mutual interests. Each side sees whatever problems arise from the viewpoint of the other, and often they are able to reach a harmonious settlement of a controversy which otherwise would result in litigation and probable ill-will.

Differences with individual shippers also are adjusted at these "harmony" meetings, and when the railroad men depart for their next stop, and the town and country people return to their respective duties, there is a general feeling that the atmosphere has been cleared, and that the railway company and the community are going to get along better in the future than in the past. Necessarily, these meetings bring out a good many "cranks"—men who think they know more than their neighbors credit them with, and who are very sure that they could operate our road far better than we do.

Necessarily, also, we are sometimes asked to do the impossible or very nearly impossible. But on the whole we are the better for knowing what the people want, and sometimes we can give it to them without too much injury to our own interests.

Our "harmony" parties do not confine their efforts to the adjustment of differences between the company and its patrons, for often there is no trouble of that character. The Santa Fe's several activities for the development of the resources of the territory traversed by its lines usually are of interest locally, and the "harmony" meetings give opportunities for the informal discussion of many industrial and other important problems, in the solution of which the company may be in position to help through one or another of its activities.

The services of departments organized by the company

*From the April issue of System.

to aid in upbuilding Santa Fe territory are free to all communities which can use them. A new policy, which has become popular, is to have our engineering department pass on plans for public work, especially bridge construction and improvements having to do with drainage, when asked to do so by the public officials in charge.

County, city or township officers desiring information of this nature are invited to communicate with the superintendent, who responds promptly. We have been in a position to assist a large number of localities in getting good results for the money they have spent, and they tell us that they appreciate this co-operation.

Our industrial department has been instrumental in bringing into Santa Fe territory many factories which the people wanted, but which were difficult to secure, in many cases because communities needing the industries lacked facilities for getting into touch with them in a reasonable length of time or at a reasonable expense. Our plan is to suggest to the commercial club of a city that it make a survey to ascertain whether there is need of new industries. This survey will result in a sort of balance sheet of the locality's assets and liabilities and usually point out what is needed to make a more favorable showing on the asset side of the account.

When such a need is found, the club enters into correspondence with our industrial commissioner, who is in touch with the demands of industries seeking locations. With the aid of this information, the commissioner often is able to bring the right towns and industries together. As an instance of the work of this bureau, see the five large sugar factories in the Arkansas Valley, the Santa Fe having spent much time and money in demonstrating the fitness of the soil and the climate for the raising of sugar beets and interesting the proper men in using them.

The colonization department of our railway operates with the view of bringing homeseekers and other desirable investors into Santa Fe territory—13 states in the Southwest. Industrial information is compiled by states, and sent to our agents all over the country. Investors, therefore, can find detailed reports about the development of our territory in any Santa Fe office in the United States. The average community needs new people and fresh money in its business, and we do what we can to help it accomplish its purpose.

We maintain an agricultural department whose mission is to carry on experiments the year round, giving the farmers the results. Our agricultural experts, all graduates of agricultural colleges, and with practical experience, keep an eye on the farmers who move into our territory from other parts of the country, to see that they start right.

A new man in a community soon becomes either an asset or a liability—of course the former if he succeeds, the latter if he fails. We want the new-comers to succeed.

The Indiana farmer moving into the Panhandle of Texas, for instance, might think he could employ the same farming methods in the new country that he used in the Hoosier state. It is the work of our agricultural experts to help the new farmer acquire knowledge of the actual climatic and soil conditions, so that his mistakes may be few and his success assured.

The activities I have just mentioned play an important part in our "harmony" meetings. Nearly every town visited is interested in some project which the Santa Fe can help to a greater or lesser degree, and these matters are discussed at the "harmony" meetings.

We have also run many demonstration trains for the purpose of disseminating information in agricultural territory, co-operating with the agricultural colleges of the several states traversed by our lines. The Santa Fe furnishes the train, and the colleges the lecturers.

The subjects discussed vary, but all have to do with farm problems—crops, live stock and farm management. Last summer the Hessian fly attacked the wheat in one of our states. We ran a Hessian-fly special, holding meetings with farmers in 68 localities, experts from the state agricultural college and the United States Department of Agriculture showing farmers how they could beat the Hessian fly next year by scientific soil culture this fall. An investigation, made lately, developed the fact that farmers quite generally followed the careful suggestion of these experts, whose advice was based on actual and detailed tests covering a period of eight years.

On one of our demonstration-train trips, a Santa Fe representative asked the audience of farmers to remain after the departure of the college men from the lecture car. As we had been running these trains for several years, and every body was familiar with the company's object, the railroad man asked the farmers if the information they were receiving was of sufficient value to them to warrant the company in continuing the service. In every case there was an affirmative shout.

Our people always have made it plain that the Santa Fe is not presuming to tell the farmers how to farm; that it is the Santa Fe's policy to co-operate with patrons as a matter of business; and that by giving farmers reliable information which will add to their prosperity the company expects to add to its own prosperity. We find that this is the kind of co-operation the farmers appreciate.

We have done some general educational work as well by contributing information on railroad subjects to colleges and high schools. A number of our officials have been on the programs for students' lecture courses.

As an educational feature, we assembled a train of old and new style equipment, and ran it over our lines to show the development in transportation facilities in 30 years. It is estimated that a million and a half people saw that train. We offered prizes to the larger school children for essays about the train. More than 8,000 compositions were received.

Primarily, of course, the Santa Fe company was organized for the transportation of passengers and freight, and whatever success has been achieved in that direction is attributable to two causes—service and the cordial relationship existing between the company and its patrons—the latter cause being due in the main to the side-line activities which I have described. The friendship of the people living along the line is regarded by the Santa Fe men as one of the company's most valuable assets.

A UNIQUE PASSENGER STATION AT COOPERS TOWN, N. Y.

The Delaware & Hudson recently completed a new passenger station at Cooperstown, N. Y., which, as a consequence of an understanding between the company and the village, was given an architectural treatment that makes it particularly in keeping with the history and character of the place. Cooperstown was the home of James Fenimore Cooper, and as Otsego, its old name, it played an important part in two of the Leatherstocking Tales. The building was dedicated with suitable exercises in which railway officers and prominent citizens participated.

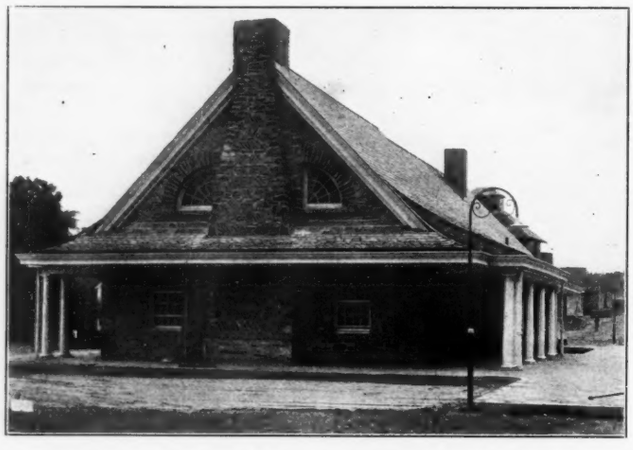
The building has a beautiful setting with a wooded hill for a background on the track side and with ample space on the village side for a considerable stretch of lawn. The building was appropriately given a colonial treatment with a steep sloping roof and characteristic porches on both the front and rear. A large outside-built chimney adds considerable to the exterior appearance and makes possible a large fireplace in the interior. The building is 94 ft. long and about 45 ft. wide. The walls are of native stone used in a most effective manner, with an uncoursed ashlar dado, above

which the treatment consists of flat stones laid in herringbone fashion with larger stones serving as quoins at the corners and the window and door openings. The roof, which is covered with slate, has an appreciable overhang on all sides of the building to form a shelter. On the two opposite sides of the waiting room end of the building this overhang is more pronounced and is treated as a porch with classic col-

The Station as Seen from the Village Side

umns and a cornice of wood, this cornice being continued entirely around the building. Concrete platforms and walks are provided with driveways and footpaths of cinders.

The colonial treatment is also carried out in the interior of the waiting room which is finished in paneled oak. This room is 29 ft. 8 in. by 42 ft. and the large stone fireplace which occupies a considerable portion of one end of the room



Close View of the Station

adds much to the effectiveness of the design. The room is provided with mahogany furniture and the walls are embellished by 19 oil paintings, 15 of which represent scenes from the Leatherstocking Tales, the other four being portraits of Cooper and other well-known men of Cooperstown.

THE ALLOYS IN A ZEPPELIN.—A French chemical journal has published an analysis of the alloys used in the construction of a Zeppelin brought down in France. For the angle brackets it was found that aluminum entered into the composition to the extent of 90.27 per cent with 7.8 per cent of zinc, 0.73 per cent of copper, and small amounts of iron, silicon, manganese and tin. For the channel sections an alloy composed of 88.68 per cent of aluminum, 9.1 of zinc, and about the same quantities of the other elements as for the angle brackets was used. The braces were evidently of commercial aluminum, that element entering into their composition to the extent of 99.07 per cent.

SCIENTIFIC MANAGEMENT APPLIED AT ONE STATION*

By Wm. J. Collins

Freight Agent, Delaware, Lackawanna & Western, Syracuse, N. Y.

About two years ago a careful analysis of our transfer freight was made. As a result of which the cars at the transfer platform were rearranged to give the shortest haul for those cars with the greatest tonnage. Another analysis of tonnage, showing the daily and car average of principal merchandise cars forwarded, enabled us to determine what cars should be provided for with empties in the transfer layout because of such cars not running regularly, and it also enabled us to know with certainty the average number of cars in excess of one car of merchandise per day certain cities would require, providing for the excess cars by selecting a favorable car or number of cars having in the transfer freight a nucleus of tonnage for that city in mind, and thereby avoiding the expense of transfer so long as more than one car was unavoidable. We then found it an appropriate time to correct our empty layout opposite the house from a changeable to a permanent one, and at the same time we changed our instructions on the doors so that when freight was accepted at the doors it would go directly across the floor to cars. In this way we succeeded in reducing to the minimum the longitudinal movement of trucks with transfer freight, and eliminating the longitudinal movement of freight accepted at the doors from city shippers. These changes occurred at a time when we received a small supply of platform trucks, and it was difficult to determine which improvement was the most helpful. The two changes combined served to reduce the total cost from 29 cents per ton to 24.2 cents per ton for the first six months of 1915.

We had no reason, however, to be satisfied. It has been observed that warehousemen are not fast walkers. It has been acknowledged by competent authority that they work continuously and do as much of their kind of work as any class of men drawing pay on the same basis. Notwithstanding these observations, the pace has been a professional one, and unwritten rules prevent one trucker from passing another, so that the slowest becomes the pace maker.

A tryout with a speed contest and records of motion observations in our inbound house, where the conditions were most favorable, appeared in line with greater progress. Two gangs of men were taken, a checker acting as foreman over a loader and three truckers. The truckers in one gang were given two-wheel trucks and those in the other gang four-wheel platform trucks. The checker of the latter gang was urged to force the use of the four-wheel trucks as much as possible and to use two-wheel trucks only at such times as the packages were exceedingly heavy and required too much energy to lift them to platform trucks. A freight office clerk with each trucker travelled with a watch in hand, timing loaded separately from empty movements. With each loader stood a clerk timing the loading, sorting and waiting on the part of the loader. At the car door of each gang stood another clerk, timing the delays to trucker No. 2 while trucker No. 1 was ahead waiting for a load.

Prior to the commencement of the test the men were given a verbal explanation as to what was to be done and how it should be done. It was announced that the earlier they succeeded in getting the necessary tonnage, the sooner they could go home, but that they would be paid for a full afternoon's work. They did not learn how much tonnage we required, but they were told there would be similar contests in different cities throughout the country and that we would naturally dislike to see Syracuse at the bottom of the list. They were

*Received in the contest on The Handling of L. C. L. Freight.

asked not to run and they were cautioned as to the necessity of stowing freight evenly in the house. They understood, however, that we were keeping the results separately for one gang from the other.

The contest had hardly commenced before it was apparent that they would nearly double their ordinary tonnage; that one gang was pitted against the other; that the two-wheel trucks were trying to hold their reputation in a contest with mixed equipment; that civic pride would hold Syracuse pretty close to the top of the list of unnamed cities; that when the loader had his load prepared for the arrival of the two-wheel truck, the loading time was almost immeasurable; that the two-wheel truck will last for a long time for narrow passageways, light loads, quick movements and short distances, and that the platform truck is the draft horse for heavier loads and longer distances and that it was slower in loading and in movement under high pressure, while requiring more room for clearance, although the increased weight of the load lessened the number of trips and in this way shortened the distance.

They did run, but only out of the car across the bridges. Their stowing was watched carefully and found satisfactory. In seeking the results obtained, all the principles of scientific management were employed, even to the extent of having a spirit of contest enter into the affair after the work had been carefully planned to obtain a maximum out-turn under the most favorable conditions, and with a reward increasing with increased performance placed promptly at their command when the work was finished. Before mentioning results it is necessary to state that the ruling commodities at Syracuse average a light load per two-wheel truck, but this handicap had been partly overcome by shortening distances, and making it possible without an incentive other than a flat day wage to truck 24 tons per trucker per 10 hours. This should be reduced 25 per cent any time it is the desire to pool the work of the loader with the truckers.

The mixed trucks handled 96,951 lb. and the straight two-wheel trucks handled 79,616 lb. in the same length of time, 2½ hours, making the difference appear for each trucker on a 10-hour basis as follows:

	Service	Column 1		Column 2
Line 1	Mixed	43	Straight	35
Line 2	Ordinary	24	Ordinary	24
	Increase	19		11

It will be observed by following horizontal line 1 that the mixed service exceeded the two-wheel trucks 8 tons per man, and, by following column 1, that the maximum increase over an ordinary day's work was 19 tons, made possible by working the platform trucks in. It is therefore possible to ascribe 8 tons or 42 per cent of the increased efficiency per man to the use of platform trucks, and the other 11 tons or 58 per cent of the increased efficiency must be ascribed to the reward increasing with the out-turn. Taking 43 tons in 10 hours as the possibility with mixed service averaging 100 ft. round trip trucking distance, and setting a task on this basis for 9 hours, i. e., permitting the gang to go home after having trucked 38.7 or 38 tons per trucker, should, in the form of a shorter day, be sufficient incentive for the checker, loader and truckers, without increasing rates to throw their wages out of proportion to the wages of other warehouse employees and without exposing the time books to the admission of doubtful factors.

It is necessary to state that the average load was 434 lb. against 235 lb. on the straight two-wheel truck. The average load would have been much greater on the platform trucks had they been used for 100 per cent of the freight instead of only 36 per cent by the gang handling them, the freight running heavy and making two-wheel trucks more attractive to load for trucking distances averaging less than 100 ft. for a round trip.

The following exhibit is intended in group 1 to represent the time in seconds used for an average round trip for mixed service (M) and for straight two-wheel trucking service (S); group 2 covers the same results reduced to a percentage basis for a better comparison; while group 3 sets forth the increased utilization of time on a percentage basis for the mixed service made possible by a reduction in the time required for trucking by reason of the heavier load, and by a reduction in waste time.

		Loading			
Group	Trucks	Trucking	Unloading	Waste	Total
1.....	M	35	68	13	116 seconds
	S	31	23	14	68 seconds
2.....	M	30%	58%	12%	100%
	S	46%	34%	20%	100%
3.....	M Incr.	....	24%	....	24%
	M Dec.	16%	....	8%	24%

Therefore in making the round trip with the platform truck in 116 seconds but with a heavier load than the two-wheel trucks carried in the other gang in 68 seconds they succeeded in bringing about a conservation of time of 8 per cent. It must be explained in this connection that while the trucker of the two-wheel truck holds his handles while the truck is being loaded, the four-wheel trucker helps the loader load.

From the foregoing it is clear enough that the distances must be shortened and the loads increased; that two-wheel trucks must be used for heavy freight and for freight likely not to clear overhead when going into a car; that congestion by reason of inadequate facilities makes such a truck indispensable, and that they are the quickest vehicle for short distances and the easiest to load. It is also clear that the platform truck has its proper place where congestion is avoidable and where the run of the freight is easily loaded on such trucks for medium and greater distances. Extreme conditions may require tractors, storage battery trucks and even inclined elevators. Longitudinal and zigzag latitudinal trucking suggests an analysis of tonnage and the tracing of lines following the movements given outbound freight after acceptance at the door.

As stations for improving the handling of l. c. l. freight cannot be established as experimental stations are established in other branches of industry, it seems that the rules for finding the total cost and then separating it into a few principal factors should be standardized. With a proper introduction of units on a scientific basis the subject would be given the prominence it deserves as an operating factor. The least expensive experiment following standardization would be to determine the task for inbound freight and make it adjustable for application to conditions varying somewhat with outbound freight, and then, to take the best results as a standard of efficiency, working to that standard by improving the plant and equipment, shortening distances and increasing the weight of the load, and correcting unprofitable practices long fixed by precedent. The minimum cost should be considered 100 per cent for the present, and any lower accomplishment appear as something less than 100 per cent. This appears to be the most logical suggestion until such a time as inventive genius will aid us by the introduction of carrier platforms to substitute a greater part of the trucking now requiring men to accompany each movement and involving 50 per cent nonproductive service in the return movement, and until such time as we are provided with facilities for chuting (with a dip) a great part of our inbound freight from No. 1 track direct into the house. Latitudinal trucking in the outbound house can be reduced easily by a similar practice, chuting the freight from the point of acceptance to the door of the car on track No. 1.

Loss and Damage

Handling less than carload freight and the subject of loss and damage are dual parts of warehouse operation. During

the first 6 months of 1914 60 claims were presented to us on account of damaged outbound freight from Syracuse as compared with 12 during the first 6 months of 1915. This decrease is due to a great extent to cleaning all car floors to know that they are free from contaminating substances, nails, cleats and other articles, including all kinds of rubbish, and to protect the freight even to the extent of giving it a level base that it may ride better. Our efforts have included frequent conversations with every warehouseman on the pay roll, knowing that the trucker can damage freight oftener than anyone else by careless handling of the freight or of his truck under it. Great effort has been made to slope the loads nicely, working under the belief that we must concede that the handling of cars in yards and trains under the most favorable circumstances requires the very best of stowing.

The increased weight of the contents per car will not increase the damage to freight except when frail articles are loaded first. In the event that there is more than sufficient tonnage for one car to one point, crowding may prevent the use of the second car. It is impracticable to hold many short-haul cars over a second day to increase the tonnage. Whether the tonnage of merchandise cars is increased or not, a separation of the freight is necessary. I am thoroughly convinced from personal observations that certain reductions of the train line pressure will cause freight to move one way or another. If it can, it will go forward; if it cannot move forward, it will either crush or raise up off the car floor. It is, therefore, safe to say that it is better to separate merchandise so that there will be at least two divisions in each end of the car, giving each subdivision a little space in which the freight may move forward, but making it possible for one subdivision to move without the pressure of the entire volume back of the moving articles.

Since January, 1915, we have made a special investigation of every over or short report received against our forwarding, for the purpose of naming our man at fault and letting him carry part of the burden, and also for the purpose of taking such other reports in connection with which we could not name both the man and the cause and probing deeper for at least the reason of our inability. Each instance was covered by a letter written by the agent, numbered and so written that the letters could be scanned hastily and the causes summarized later. As a rule the letter was addressed to the agent who had issued the exception report, and a copy was given to the division superintendent. We followed the practice of naming the man responsible, and we gave that man a copy of the letter after talking with him verbally. No replies were necessary. The men were sensitive and we were satisfied that good results were coming. It was necessary to drop a small number of truckers who had shown their inability to carry the tickets as directed, and before six months had expired we had to part with our oldest checker, whose unreliable work demanded too much inspection and correction.

On the billing desk we insisted on greater accuracy, and placed additional responsibility on our revision clerk. We also required of him a nightly statement showing how many errors in billing he caught on each bill clerk, and making him responsible for errors committed but not detected.

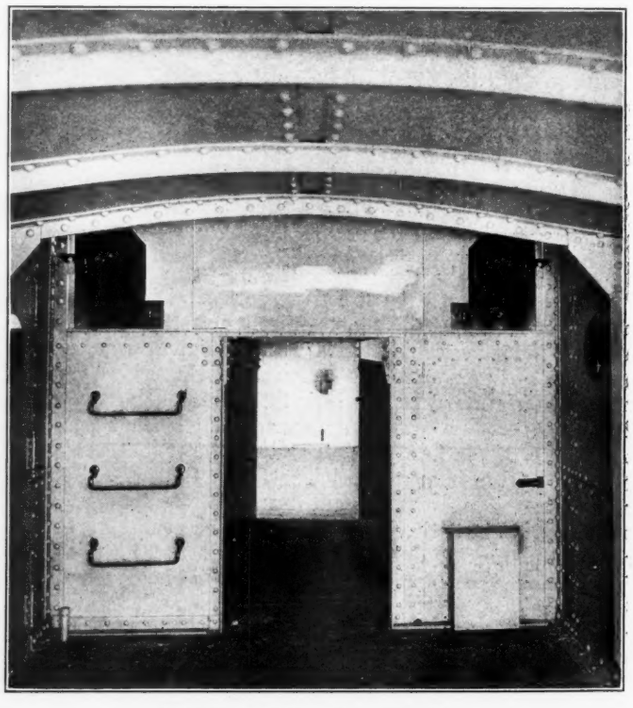
There were 1,138 over and short reports issued against this station during the first six months of 1914, or 7½ per working day. The following year only 270 were issued during the same length of time, or 1.7 per working day. We started out with shipping orders, tickets, loading errors, billing and transfer as the 5 subdivisions of the operation in which errors were located. Under these 5 subdivisions, we numbered 27 causes for over and short reports. After 4 months' active work, we removed 9 of the causes. We distributed the responsibility as direct and associate, direct with the checker, for instance, and associate with the doorman or loader, or both. Eleven other causes were located beyond, either in an error in the face of a clear loading record and finally so accounted, or by making reports against Syracuse instead of some other station. One hundred and nine errors or 40 per cent were located beyond our station; 26 or 10 per cent (mostly freight checked over before the receipt of the billing) were classed as doubtful, and 135 or 50 per cent were located positively at Syracuse—almost one per day, with a daily average loading of approximately 300,000 lb. of merchandise. The errors at Syracuse were divided between warehouse and billing forces as follows:

Warehouse	82	= 62	per cent
Billing clerk	52	= 38	per cent
	135	100	per cent

Considering the warehouse organization as the field, and bearing in mind that the field corrected 42 mistakes by retransferring 100 packages wrongly loaded, this left only the 83 mistakes they made and did not correct in handling 82,500 shipments, which is best evidence that instead of chaos we have an organization handling a large volume of traffic on efficient lines, and that where efficiency is found order prevails; and economy is not only possible but inevitable.

ARMORED CAR FOR THE U. S. ARMY

The first armored car to be constructed for the United States army was recently completed by the Standard Steel Car Company at its Hammond, Ind., plant. It was designed under the direction of the Board of Engineers of the United States army, and the completed car was delivered 27 days after the plans were started. This car consists of a heavy open hearth steel plate structure of sufficient thickness to withstand fire from small arms and is especially designed to guard railroads and depots in time of warfare or during any local uprising. It is not ordinarily to be employed in aggressive movements. In effect, it is a moving block house which may be used at any point along the line, or it may be used as a retreat for troops when necessary. It will also be of service in transporting troops or explosives or other perishable material which might be damaged by fire



Interior of the Armored Car

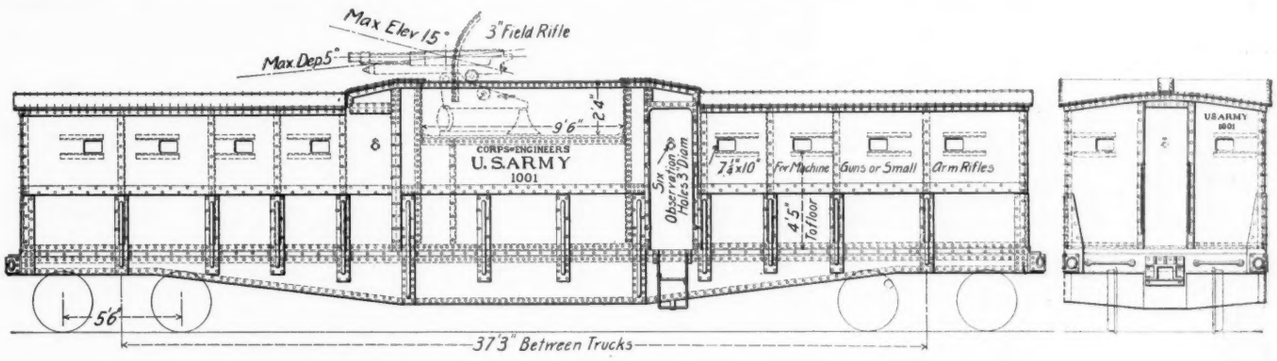
from the enemy, past danger points. The car is known as a light armored car and is to be equipped with a 3-in. rapid fire field gun, having a special recoil mounting which will obviate the necessity of providing out-riggers when the gun is being fired. This gun is located in the gun-well at the top of the car, as indicated in the top view, the gun there shown being a model of a 3-in. field gun. This gun-well may also be used as a fighting top for troops armed with machine guns or rifles. There are 20 port holes measuring 7¼ in. by 10 in., for machine guns or small arms, 8 being located in each side of the car and 2 in each end. Sliding doors of heavy steel cover these openings when they are not in use. There are also 6 peep holes, 2 in each side of the car and 1 in each end. Access to the car is obtained through 4 door openings, 1 on each side and 1 on each end.

The interior of the car is divided into 3 compartments; the end compartments are for the use of troops operating the machine guns and rifles through the port holes, and the center compartment, which is not the full height of the car, is used for storing the ammunition. It is capable of holding a large quantity of ammunition either for small arms or for the rapid-fire gun. The car will accommodate a company of infantry seated on camp stools or on benches. A dry-hopper lavatory and a water tank having a capacity of 300 gal., from which the water is brought to the interior of the car by a hand-pump, has been installed on the car for the convenience of the soldiers. When used in patrol service there will not be more than 12 men in the car, just enough to operate the rapid-fire gun and the machine guns. In the interior view there will be noticed a ladder on the partition of the middle compartment at the left. This leads to an opening to the gun-well at the top of the car, there being a similar entrance on the other side of this compartment. There is a similar opening at each of the other corners of the gun-well through which the ammunition is passed for the rapid-fire gun. These openings are protected by heavy steel sliding doors.

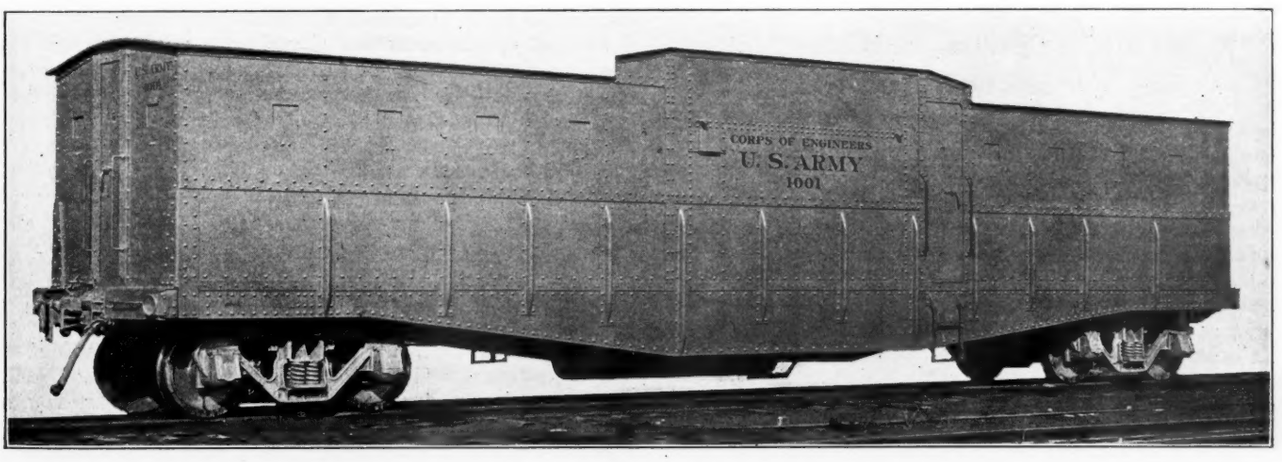
The construction of the car consists of an all-steel high-capacity underframe of standard construction on which is mounted the special steel superstructure. The car weighs 86,200 lb., and has the following general dimensions:

Length over striking plates	48 ft. 4½ in.
Outside width	10 ft.
Top of rail to top of floor	3 ft. 11 in.
Inside length	47 ft.
Inside width	9 ft. 3 in.
Inside height	7 ft.
Distance from center to center of trucks	37 ft. 3 in.
Truck wheel base	5 ft. 6 in.
Size of journals	5½ in. by 10 in.
Wheels, diameter	33 in.

The center sills are of the fishbelly type, being made of two webs of ⅜-in. steel plate, each web being reinforced at the bottom with two 4-in. by 3½-in. by ½-in. angles, and at the top by one 3½-in. by 3-in. by ⅜-in. angle. The two members of the center sills are tied together by a cover plate



Side and End Elevations of the Armored Car for the United States Army

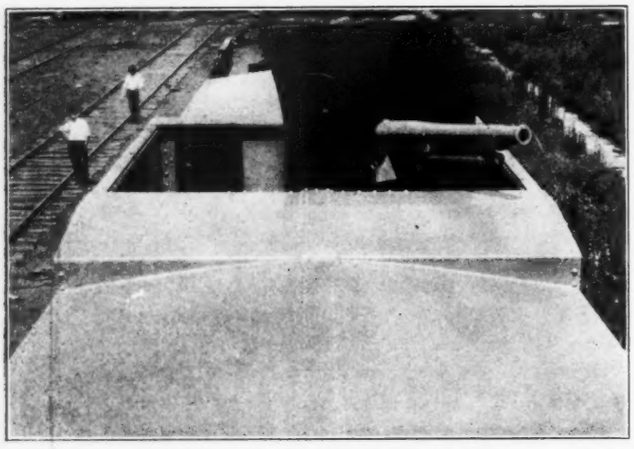


Armored Car for the United States Army

7/16 in. thick by 21¼ in. wide. The center sills run continuously through the body bolster to a distance of 1 ft. 10⅝ in. beyond the center line of the bolster. The depth of the center sill over the angle and at the center is 2 ft. 6 in. The side sill is of the fishbelly type, made of 5/16-in. steel plates reinforced at the top and bottom with 4-in. by 3½-in. by ½-in. angles. The depth of the side sill at the center is 25½ in. The body bolsters are of 5/16-in. pressed steel plate. The top cover plate is 16 in. wide by ½ in. thick, and the bottom tie plate is 15 in. wide by ½ in. thick. The crossbearers and crossties are of the pressed steel type, be-

ing made of ¼-in. steel plate. The crossbearer cover and tie plate is 10 in. wide by ⅜ in. thick. The end sills are made up of 10-in., 15-lb. channels, having 7/16-in. cover plates.

The car is equipped with the New York Air Brake Company's schedule K-10-C air brake with a K-2 triple valve. The Miner tandem draft gear with the Sharon M. C. B. type automatic coupler is used with the Imperial uncoupling device. The couplers are fitted with Buckeye cast steel yokes. Vulcan cast steel truck side frames and the Scullin Steel Company's cast steel truck bolsters are used on the trucks.



Top View, Showing the Gun-Well Equipped with a 3-in. Field Piece

The wheels are forged steel. The Miner side truck bearings and the Davis inside hung brake beam are also used on this car. The car is to be shipped to the Sandy Hook Proving Grounds, where it will be equipped and tested by the ordnance department of the United States army. From there it will probably be sent to the Mexican border for service.

WAR PAYMENTS TO THE BRITISH RAILWAYS

By Julius H. Parmelee

Twenty-four hours after the outbreak of war with Germany, August 4, 1914, Great Britain mobilized her railway resources for military purposes. A Railway Executive Committee of 10 general managers was organized, with a member of the government Board of Trade as chairman, while a financial agreement was made whereby the railways were to expedite all military business without reference to cost or details of payment, the government agreeing at the end of the fiscal year to make good all losses in net revenues below the normal level. The only proviso was that if the net revenue of any railway for that part of 1914 just preceding the war (January 1, 1914, to August 4, 1914) showed a decrease as compared with the net revenue of the corresponding period of 1913, the net revenue for the balance of 1913 would be reduced in the same ratio in computing the amount to be paid over by the government to the railways.

The net revenues of the British railways during the first 6 months of 1914 showed a decrease of about 2½ per cent from the net revenues of the corresponding period of 1913. Because of this, the London Statist calls the bargain between the government and the railways an agreement "under which the railways were taken over by the state during the war on a rental of the net earnings of the year 1913, less a percentage allowance of about 2½ per cent."

The agreement has been subjected to a number of modifications. In the first place, railway employees have been active in demanding war bonuses, and several concessions have been made to them by the railways with the concurrence, or even at the instance, of the government. These bonuses at first were wholly borne by the government. In the second place, beginning with January 1, 1915, the government agreed to make up the normal net revenues of the railways, without the proportional reduction of 2½ per cent noted above; the railways, on their side, agreed to bear 25 per cent. of the war bonus, the government carrying the remaining 75 per cent. Still later, the war bonus was increased in amount and scope, and the proportion chargeable to the railways was reduced from 25 to 12½ per cent. "The result of the various arrangements," says the Statist, "is that the government during the period of the war has leased the railways on the basis of their net earnings in 1913 less 12½ per cent of the war bonus granted to the men, and that out of this rental the companies have to meet any addition to their interest charges."

Information is now available as to the way in which this financial arrangement has operated. The fiscal year of the British railways closes on March 31. Returns for the first fiscal year under the war agreement, ended March 31, 1915, have recently been made public in a government White Paper. From August 4, 1914, to March 31, 1915, a period of about 7 months, the government advanced the railways £6,851,957, or about $33,350,000, to offset the reduction of their net revenues. These advances were made monthly to the Railway Executive Committee, for distribution among the individual railways. The amount is subject to adjustment after an audit of the yearly accounts of the railways by a chartered government accountant.

It is difficult, on this side of the Atlantic, to analyze the bargain between the British government and the railways, without having more detailed information regarding railway operations in England than has thus far been vouchsafed. Since the war began, the English railway reports have been shorn of practically all details regarding traffic handled, receipts, and expenses, and it is next to hopeless to attempt an analysis of the situation from the American point of view. At first sight $33,000,000 does not appear a heavy charge to the government for the services of the British railways during the early months of the war. This feeling is amply borne out by the comments of various English journals regarding the situation. The arrangement has been termed a "great bargain for the government," considering the added work and strain placed upon the shoulders of the railway organization. "From the point of view of the companies," says the Statist, "it would have been very much more advantageous to have charged the government for work performed and carried on business as far as possible as usual, for as matters now stand railway profits have appreciably declined, while the profits of practically all other trading companies working for the government have largely increased."

Whatever the underlying causes, the market value of standard British railway stocks have greatly fallen off, and the sole hope of railway investors seems to lie in post-bellum industrial activity that will bring with it added earning power on the part of the roads. Furthermore, the lesson in co-operation which the British railways are now learning cannot fail to have some influence in various ways, and this entirely apart from the problem of government ownership or control, on which war arrangements can throw but little light.

Record Exports of Locomotives.—In the 11 months ended May 31, 1916, 740 locomotives were exported, as compared with 216 and 364 for the like periods in 1915 and 1914, respectively. In 1915 the total number exported was 621, against 269 in 1914 and 491 in 1913. Of the 740 sent abroad in the last 11 months, 209 went to Europe, 209 to Russia in Asia, 103 to Cuba, 39 to Canada and 36 to Mexico. —*Iron Age.*

Wage Controversy Referred to Mediation

National Conference Committee of the Railways Invokes Services of Board of Mediation and Conciliation

The National Conference Committee of the Railways on Wednesday of this week applied to the United States Board of Mediation and Conciliation for its services for the purpose of bringing about an amicable adjustment of the controversy with the four brotherhoods of train service employees that have voted to strike to enforce their demands for an eight-hour basic day and time and one-half for overtime in freight and yard service.

The railroad committee made its request for the services of the board after its proposal that the brotherhoods join in the application had been declined by the presidents of the four organizations at a conference in the Engineering Societies' Building, New York City.

The results of the strike vote taken by the brotherhoods were announced at the conference on Tuesday, after which the brotherhoods asked the railroad committee if it cared to present a definite proposition. An adjournment was taken until Wednesday, when Elisha Lee, chairman of the National Conference Committee of the Railways, presented the following letter proposing a joint application for the services of the board:

"The National Conference Committee of the Railways has again given most careful consideration to the matters in controversy between us and to all that has been said in our various conferences which began on June 1. We have also carefully considered the serious situation presented by the result of the strike vote of employees and the grave responsibility which rests on both parties to the conference to exhaust every honorable means to avoid the public injury which must inevitably result should you decide to exercise the power which the strike vote has placed in your hands.

"After such consideration, it is our judgment that the proposals which the men have supported by their vote involve such extraordinary changes in operating methods and such radical revisions in established bases of compensation as to make it apparent that there is little probability of our being able to harmonize our differences of opinion unless this result can be brought about through the Federal Board of Mediation and Conciliation, which was created to assist the parties in just such circumstances as now confront us.

"The National Conference Committee of the Railways is as sincerely anxious as your committee can be to reach some amicable adjustment of the matters involved in the present controversy, but we are convinced that in the end we shall have to invoke the friendly offices of the Federal Board of Mediation. The unbroken experience of the past ten years sustains us in this view. During that period in practically no large concerted movement has a Conference Committee of Managers and a committee of your representatives ever been able to reach a final and complete adjustment of the matters in controversy between them, until after they had invoked the provisions of the Federal Mediation Law. It seems to us that all the considerations that have existed in former controversies to prevent a settlement being reached by direct negotiations are present in an accentuated form in the present case.

"It is not open to question that whatever we can do by direct negotiations, we can also do just as quickly and as effectively through mediation; and experience has demonstrated that a common ground could be reached through the mediators in cases where the parties have been wholly unable to reach such common ground through direct negotiations.

"Accordingly we propose that you join with us in an application to the United States Board of Mediation and Conciliation and invoke its services for the purpose of bringing about an amicable adjustment of the controversy."

A. B. Garretson, president of the Order of Railway Conductors, who acted as spokesman for the brotherhoods, stated the declination to join in the application, and the presidents of the other three organizations expressed their concurrence in his statement. Mr. Garretson said that personally he did not believe that a better purpose could be served by doing business through mediators than by the parties themselves. He thought a better understanding could be reached directly without the intervention of a third party, and he would prefer to try to reach a settlement without mediation, if possible. However, he said, a request for mediation does not require the concurrence of both sides; if the railroads made the request the mediators would go to the other side, and the brotherhoods would then give their answer as to whether they would take part in the mediation proceedings.

Members of the board, William L. Chambers, commissioner, Judge Martin A. Knapp, and G. W. W. Hanger, were already in the city prepared to render their assistance whenever it should seem necessary. Upon receipt of the letter from the National Conference Committee of the Railways the board immediately sent a letter by messenger to the heads of the brotherhood. After the labor leaders had agreed to accept mediation, the mediators went into conference with the railway officers.

The results of the strike vote as announced on Tuesday, subject to slight corrections, were as follows: Brotherhood of Locomotive Engineers, southeastern district, for a strike, 98.72 per cent; western district, 90.35 per cent; eastern district, 94.64 per cent. Brotherhood of Locomotive Firemen and Enginemen, for a strike, 98.1 per cent; including non-union men, 98.3 per cent; total vote, 70,653. Brotherhood of Railroad Trainmen, for a strike, 129,108, or 97 per cent; against a strike, 4,276. Order of Railway Conductors, for a strike, western district, 84.3 per cent; eastern district, 84.8 per cent; southeastern district, 93.4 per cent.

The brotherhoods were represented by A. B. Garretson, president, and L. E. Sheppard, vice-president, of the Order of Railway Conductors; W. S. Stone, grand chief engineer of the Brotherhood of Locomotive Engineers; W. S. Carter, president, and Timothy Shea, assistant president, of the Brotherhood of Locomotive Firemen and Enginemen; W. G. Lee, president, and T. R. Dodge, assistant president, of the Brotherhood of Railroad Trainmen, and several hundred general chairmen from the different roads.

Elisha Lee, chairman of the National Conference Committee, asked for a statement of the vote by roads, but the officers of the brotherhoods refused to give it in further detail. President Lee, of the trainmen's organization, said he would do so if the railroad committee would give the results of the "vote" taken by certain roads that had asked their employees to sign a statement that they would be loyal to the company. Mr. Lee replied that this was a matter with which the committee had nothing to do.

Mr. Garretson, acting as spokesman for the brotherhoods, then asked the railroads for a proposition.

"Now you know the result of the vote," he said, "and it is up to you to decide whether or not, in the face of this record, there is any desire on your part to proceed toward a settlement by modifying in any way the position you have heretofore maintained. Our demand calls for certain changes in the basic day and also establishes the new principle of

'punitive' overtime, which we consider what might be called the 'enacting clause' of the eight-hour day demand. The fact that we are asking for a penalty against overtime is itself a refutation of the claim that we are merely asking for more money.

"If there is any disposition on the part of the conference committee to make us a proposition we are ready to give consideration to it. If there is no desire on your part to deviate from the attitude you have assumed, that is for you to determine." He added that the railroads had before made certain "contingent" proposals and that he hoped they would now make a definite proposition.

Mr. Lee replied that the conference committee would give no answer until after a discussion by the committee, but that it would give a reply on the following day.

At the opening of the conference Mr. Lee announced the position of certain roads that had declined to give the conference committee authority to represent them. These were, in most cases, separately operated subsidiary companies or local lines. A number of western roads also declined to authorize the committee to represent them in negotiating as to hostlers and some of the southern lines took the same position as to negro firemen, reiterating the statements they had made at the previous conference. The officers of the brotherhoods repeated their previous protests against this attitude, but Mr. Lee stated that the committee must necessarily be governed by its authorizations. W. S. Carter protested, especially against the exclusion of the negro firemen, whom his organization has been trying to displace for several years. W. G. Lee said he wished it understood that his organization was negotiating for the position of brakeman, whether the jobs are held by white men or negroes. W. S. Stone said the engineers' brotherhood would insist on representing the firemen on southern roads on which the firemen have no organization.

President Wilson is reported as having devoted considerable attention to possible means of averting a strike, and on Friday, August 4, conferred with W. L. Chambers, commissioner of the United States Board of Mediation and Conciliation. According to press reports it was decided that the government could do nothing of a formal nature until after the conference between the committees representing the roads and the employees. Commissioner Chambers said that in case of a failure to reach a settlement at the conference the board would tender its services. On Thursday the President appointed G. W. W. Hanger, assistant commissioner of the board, a member of the board.

The Senate Commerce Committee on Friday tabled the resolution introduced in the Senate by Senator Newlands, directing the Interstate Commerce Commission to investigate the entire subject of railway wages, which was proposed by the Chamber of Commerce of the United States. The committee had before it a letter from the brotherhoods, saying: "We believe the committee should remain neutral at least until jointly called upon by the National Conference Committee of the Railways and the representatives of the railroad brotherhoods." The Chamber of Commerce had asked for a hearing. In explanation of the action of the committee, Chairman Newlands said: "The committee deemed it inadvisable, while proceedings were pending under the mediation-arbitration act, to take up the subject of the pay and hours of service of railway employees. It was also deemed inadvisable to add to the present duties of the Interstate Commerce Commission, which, as is well known, is overloaded with work."

The National Conference Committee has published in farm papers an advertisement headed: "A Great Increase in Railroad Wages Means Higher Freight Rates and a Burden on Agricultural Prosperity." The advertisement includes a table, giving the average earnings of three-fourths of the train employees in the United States for 1915, excluding extra men and those who worked only part of the time, as follows:

	Passenger		Freight		Yard	
	Range	Average	Range	Average	Range	Average
Engineers	$1,641 to 3,983	$2,067	$1,455 to 3,505	$1,892	$1,005 to 2,445	$1,526
Conductors	1,543 to 3,004	1,850	1,353 to 2,932	1,719	1,055 to 2,045	1,310
Firemen	943 to 2,078	1,203	648 to 2,059	1,117	406 to 1,633	924
Brakemen	854 to 1,736	1,095	755 to 1,961	1,013	753 to 1,821	1,076

Officers of the train service brotherhoods addressed a mass meeting in New York on Sunday evening. L. E. Sheppard, vice-president of the Order of Railway Conductors, said it "might be necessary to inconvenience the public for 36 or 48 hours." W. G. Lee, president of the Brotherhood of Railroad Trainmen, said "We will not strike if there is any honorable way out. But we must receive the basic eight-hour day." W. S. Stone, grand chief of the engineers' brotherhood; Frank P. Walsh, former chairman of the United States Commission on Industrial Relations, and Dudley Field Malone, collector of the port of New York, also spoke and denounced the railroads.

A committee representing the Switchmen's Union, which presented demands on a number of roads in March for an eight-hour day and time and one-half for overtime, has been in conference in New York for some time with a conference committee representing the railroads concerned, of which Horace Baker, general manager of the Queen & Crescent, is chairman. These roads include the following: New York Central; Michigan Central; Lehigh Valley; New York, Chicago & St. Louis; Pere Marquette; Chicago, Rock Island & Pacific; Chicago & Eastern Illinois; Chicago Great Western; Minneapolis, St. Paul & Sault Ste. Marie; Elgin, Joliet & Eastern; Texas & Pacific; Baltimore & Ohio Chicago Terminal; and the Delaware, Lackawanna & Western.

On Thursday Mr. Baker and S. E. Heberling, vice-president of the Switchmen's Union, joined in a request for the services of the Board of Mediation and Conciliation, saying they had failed to reach an agreement. Commissioner Hanger at once went to New York and began conferences with the two committees. On Monday an agreement was reached to arbitrate the controversy under the terms of the Newlands law.

THE TRANSPORT OF HEAVY GUNS.—With the size and weight of naval guns railways are only interested in so far as they have to carry them from the factory to the ship. This they are seldom called upon to do, but as the war on land is fast becoming a series of sieges in which the heaviest ordnance is used, this transport from place to place in warfare becomes a vital question. Not only have these huge guns to be shifted along the front, but they have to be moved backward and forward with the line of battle. If the light railways and their rolling stock, which do such good service at and near the front, could possibly be adapted for the purpose nothing more would be required. This is a counsel of perfection and the problem is, it is to be hoped, engaging the attention of all railway engineers. It is a problem that will require to be constantly solved until all the fighting is transferred from the land to the air. Were provision made for carrying these heavy loads on the normal or standard gages it should not be difficult to devise a means of transporting the broad-gage trucks on the narrow and lighter gages—as, indeed, is already done on several lines—and the less shifting these unwieldy monsters would have to undergo the quicker would be the process of bringing them to the places where their destructive powers would be most effective. If such a system could be perfected, light lines might be prepared in all districts, so that only the rails would have to be laid down. —*Railway Gazette, London.*

General News Department

Considerable numbers of Mexicans from the southwestern states are working as track laborers on the Pennsylvania Railroad.

The Southern Pacific has established at San Francisco, a school for station agents. It is under the supervision of E. L. King, superintendent of telegraph, and all station operators are invited to qualify as students. The school is not to teach telegraphy, but its curriculum includes all other branches of station work.

C. H. Ketcham, superintendent of the Stockton division of the Southern Pacific, has presented gold watches to two boys, 11 and 12 years old, respectively, who averted what might have been a serious accident on June 4, when an irrigating canal broke its banks and flooded the railroad tracks near Arena, Cal. The boys saw the danger and flagged the trains.

The Southern Railway sustained severe losses by the recent floods in North Carolina, but, with the desire to see the entire fund contributed by citizens go to relieving actual necessities in the storm-stricken district, will give free transportation of shipments from the State Relief Committee of clothing and other supplies consigned for gratuitous distribution among those who suffered.

For the use of pneumatic tubes for the transmission of mail in the large cities, which has been a subject of a good deal of controversy in Congress, the Post Office appropriation bill for the current year allows $976,000; but it authorizes the continuation of the present contracts only until March 4, 1917; the understanding being that the question will be reopened in Congress before that date.

An extensive system of military telegraph lines is being constructed along the Rio Grande river by army signal corps. The wires will connect the different supply bases with the headquarters and patrol camps that are scattered along the river. From Alpine, Marfa and Marathon the lines run to Shafter, Presidio, Terlingua, Boquillas and other points in the Big Bend region. The lines are of a permanent type of construction, and it is supposed that they will be left to serve any future emergency.

The Southern Pacific has 105 dining cars, 63 buffet cars, four cafe cars and one lunch car. Its dining car mileage last year was 10,832,847, and 3,207,353 persons were fed on the diners. There are in use 65,625 pieces of silver, 131,797 napkins 36,098 tablecloths, 19,425 pieces of glassware and 71,820 pieces of chinaware. Fifteen restaurants served 1,612,293 meals. The chief commissaries are at West Oakland Yards, Northern Lines; Los Angeles, Southern Lines; Ferry Building, San Francisco, for steamers and ferries; Houston for the Sunset Lines; San Francisco, New Orleans, San Antonio, El Paso and Ogden.

The Baltimore & Ohio, to aid in the Ohio state campaign to protect citizens engaged in industrial employment against accidents, has notified Victor T. Noonan, director of safety of the Ohio Industrial Commission that it will tender the use of a passenger coach and will arrange for its transportation. The car will be fitted up with exhibits showing what the manufacturing and industrial concerns are doing to provide for the safety of their workmen. In the windows of the car there will be shown a series of transparency views illustrating some of the things that have been done by this road in the interest of "safety first." It is planned to have the car cover the state, visiting numerous localities which were not reached by the train recently run by the Federal government.

In a trip ending July 29 at 4:10 p. m., an automobile was run from New York City to San Francisco in 137 hours, 40 minutes, this being 40 hours better than the best previous record. The car was a six-cylinder Marmon. The run was managed by Samuel B. Stevens, of Rome, N. Y., chairman of the motor reserve committee of the American Defence Society, and his purpose was to demonstrate the value of the automobile when military forces must be quickly mobilized. The car was kept constantly in motion, as nearly as possible, and Mr. Stevens himself ran it a large part of the way. He had two assistants and when they were running it, he went ahead by railroad. The route was by way of Albany, Utica, Syracuse, Buffalo, Cleveland, South Chicago, Clinton (Iowa), Omaha, Cheyenne, Salt Lake City, Ely (Nev.) Austin and Reno. Mr. Stevens has been across the continent in an automobile several times and he deems this the best route. This is the first time that a run of this kind has been made, westward; other fast runs have been made from West to East. Mr. Stevens lost three hours by a mistake of his pilot, and seven hours because of the loss of a wheel when he came near colliding with an eastbound car at a sharp curve. Mr. Stevens went from Syracuse to Omaha by railroad and says that he arrived only thirteen minutes ahead of the automobile. The distance, through, is said to be 3,390 miles, and the average rate of speed thus was 24.6 miles an hour. The start was made at Columbus Circle, New York, July 24, at 1:30 a. m., making the apparent time 134 hours, 40 minutes. Deducting the nine hours lost by accident the time is only about 18 hours longer than that made by the best schedules of the railroads.

Troop Movements Over the S. P.

The Southern Pacific Lines have been called upon to move troops from Massachusetts, New York, Minnesota and all parts of the United States. In July, on the Texas lines there were handled 98 trains, consisting of 1,452 cars of all classes—Pullman tourist, day coaches and box cars; and a total of 27,127 persons, together with their equipment, motor trucks and stock. One Illinois colonel states it was the best equipment and handling he had experienced on the whole trip! A New York officer was very complimentary, stating it was the only road where he wasn't jerked off his seat and the only line where he found any representatives who knew anything about railroading.—*Southern Pacific Bulletin.*

B., R. & P. Firemen's Convention

The third annual convention of the Buffalo, Rochester & Pittsburgh Railway Fire Department Association was held at Salamanca, N. Y., August 9. There was a parade in which the mayor of Salamanca and city officers participated, and two bands made music. Besides the eighteen fire companies, there were nine first aid teams from various points on the road. There was a first aid contest under the direction of Major Robert U. Patterson, of the American Red Cross, with first, second and third prizes. The Salamanca First Aid Team took first place, and, in addition to winning a medal from the railway company, will be sent at the company's expense to the meeting of the Congress of the National Safety Council, which will be held in Detroit in October. The Cummings team took the second prize, and Dubois car shops third.

The races and contests included a hose race, hub and hub race, coupling contest, 50-yard dash for ladies, 100-yard dash open to members of fire companies, and a tub race for children. In the evening there was dancing, and the visitors went home by special trains.

Safety First on the Pittsburgh & Lake Erie

G. B. Cooley, an employee of the Pittsburgh & Lake Erie, has been awarded a prize of $10, which was offered by the Central Safety Committee of the road for the best paper of not over 500 words on accident prevention, and the paper has been posted on the bulletin boards. Mr. Cooley reminds his fellow employees that the period of a man's education in safety first ought not to continue forever; that, after having been taught, it is the duty of employees to carry out the improved ideas that they have acquired. He says:

"By safeguarding machinery and dangerous locations we may eliminate a large per cent of injuries, but we still have accidents and the system of mechanical protection is only a step toward

the attainment of high efficiency. Safety Committees can impress the necessity of carefulness, and by perservering along this line create improvement; but it is important that this movement have the respect of those for whom it is intended, and all persons engaged or interested should attempt to arouse as much enthusiasm as possible, avoiding spasmodic efforts. The careless should be cautioned regardless of personal feeling or prejudice; for finally, after this period of education, will come a strict enforcement of safety first rules."

Pennsylvania Adopts Green for Proceed

The Pennsylvania Railroad announces that orders have been given for the adoption of the green-yellow-red scheme for the night indications of signals on its lines; and the order includes not only fixed signals but also markers on the rear of trains; switch lamps; markers for track tanks; slow signs; resume speed signs; hand lamps at interlocking and block signal stations; and lights displayed to the public at crossings. Lights at highway crossings will be red instead of green, as at present.

It is expected that the change will require some little time for its accomplishment. The number of glasses to be changed runs into the hundreds of thousands and, because of present industrial conditions, deliveries of material may be slow.

Green for proceed and yellow for caution have been in use on the Pennsylvania terminals, New York City, for six years past.

The "position-light" signals on the main lines of the Pennsylvania, near Philadelphia, are not affected by the new order.

Railway Revenues and Expenses for May, 1916

Net operating income of the railways of the United States for May increased $136 per mile, or 52.6 per cent, as compared with May, 1915, according to the monthly bulletin of the Bureau of Railway Economics. Comparing May, 1916, with the average May of the preceding five years, the increase was 58.0 per cent.

Total operating revenues amounted to $300,092,576, an increase over 1915 of $62,140,838. Operating expenses were $196,731,099, an increase of $29,273,494. Net operating revenue amounted to $103,351,477, an increase of $32,867,344. Taxes were $12,486,868, an increase of $1,117,773. This left $90,787,146 net operating income, available for rentals, interest on bonds, appropriations for improvements and new construction and dividends. Operating revenues per mile averaged $1,307, an increase of 25.2 per cent; operating expenses per mile were $857, an increase of 16.6 per cent; net operating revenue per mile averaged $450, an increase of 45.6 per cent, while net operating income per mile was $395, an increase of 52.6 per cent. Taxes per mile increased 9.0 per cent. Railways operating 229,638 miles of line are covered by this summary, or about 90 per cent of the steam railway mileage in the United States.

Operating revenues of the eastern railways per mile show an increase of 26.6 per cent as compared with May, 1915; operating expenses increased 19.3 per cent, net operating revenue increased 43.4 per cent, and taxes increased 7.0 per cent. Operating income per mile increased 49.4 per cent.

Operating revenues of the southern railways per mile increased 22.9 per cent, operating expenses increased 11.9 per cent, net operating revenue increased 50.1 per cent, and taxes increased 13.0 per cent. Operating income per mile increased 56.7 per cent.

Operating revenues of the western railways per mile show an increase of 24.9 per cent, operating expenses increased 15.6 per cent, net operating revenue increased 47.0 per cent, and taxes increased 9.9 per cent. Operating income per mile increased 55.7 per cent.

The eleven months of the current fiscal year, compared with the corresponding period of the preceding year, show changes per mile of line as follows: Operating revenues increased 16.6 per cent, operating expenses increased 7.9 per cent, net operating revenue increased 37.6 per cent, taxes increased 7.7 per cent and operating income increased 43.3 per cent.

Operating income per mile increased 56.7 per cent in the East, increased 50.8 per cent in the South, and increased 29.7 per cent in the West.

May operating income per mile was 52.6 per cent greater in 1916 than in 1915, 102.3 per cent greater than in 1914, 44.8 per cent greater than in 1913, and 58.4 per cent greater than in 1912.

REVENUES AND EXPENSES OF STEAM ROADS—MAY, 1916

Compiled from monthly returns of the railways to the Interstate Commerce Commission and covering roads of Class I, *i. e.*, roads with annual operating revenues above $1,000,000.

Account.	United States				Eastern District				Southern District				Western District			
	Amount, May, 1916	Per mile of line		Increase over 1915 Per cent	Amount, May, 1916	Per mile of line		Per cent over 1915 Increase	Amount, May, 1916	Per mile of line		Increase over 1915 Per cent	Amount, May, 1916	Per mile of line		Increase over 1915 Per cent
		1916	1915			1916	1915			1916	1915			1916	1915	
Total operating revenues	$300,082,576	$1,307	$1,044	25.2	$139,653,016	$2,370	$1,873	26.6	$43,495,636	$1,024	$833	22.9	$116,933,924	$912	$730	24.9
Freight	217,481,579	947	725	30.6	100,016,116	1,698	1,308	29.7	32,882,334	774	612	26.5	84,583,129	659	493	33.7
Passenger	54,253,790	236	218	8.4	24,933,450	423	377	12.4	7,385,236	174	156	11.4	21,935,104	171	165	3.6
Mail	4,992,210	22	21	4.8	1,850,037	31	29	7.3	642,668	15	15	1.7	2,499,505	19	19	4.0
Express	7,447,972	33	26	25.8	3,657,523	62	45	38.9	1,100,873	26	21	21.1	2,689,576	21	18	13.4
All other	15,907,025	69	54	28.2	9,195,890	156	114	37.2	1,484,525	35	29	19.8	5,226,610	42	35	17.7
Total operating expenses	196,731,099	857	735	16.6	92,152,008	1,564	1,311	19.3	28,249,656	665	594	11.9	76,329,435	595	515	15.6
Maintenance of way and structures	38,546,686	168	148	13.3	15,834,545	269	240	12.1	5,404,404	127	120	5.7	17,307,737	135	115	17.3
Maintenance of equipment	49,883,946	217	177	22.6	23,837,526	404	332	21.7	8,039,978	189	149	27.0	18,006,442	141	115	22.5
Traffic	5,280,695	23	22	7.1	1,989,108	34	31	8.7	969,480	23	20	11.6	2,322,107	18	17	4.1
Transportation	94,519,610	412	355	15.9	46,526,580	790	649	21.7	12,575,603	296	280	5.9	35,417,427	276	244	13.1
General	6,844,954	30	28	8.4	2,997,300	51	46	11.4	1,108,278	26	24	10.5	2,739,376	21	20	4.8
All other	1,655,208	7	5	35.8	966,949	16	13	25.8	151,913	4	1	286.7	536,346	4	4	31.6
Net operating revenue	103,351,477	450	309	45.6	47,501,008	806	562	43.4	15,245,980	359	239	50.1	40,604,489	317	215	47.0
Taxes	12,486,868	55	50	9.0	4,976,871	85	79	7.0	1,764,797	41	37	13.0	5,745,200	45	41	9.9
Uncollectible revenue	77,463	*	*	....	22,347	*	*	....	21,837	1	*	....	33,279	*	*	....
Railway operating income	90,787,146	395	259	52.6	42,501,790	721	483	49.4	13,459,346	317	202	56.7	34,826,010	272	174	55.7
Operating ratio—per cent—																
1916		65.6				66.0				64.9				65.3		
1915		70.4				70.0				71.3				70.5		
Average mileage represented—																
1916		229,638				58,916				42,464				128,258		
1915		227,956				58,764				42,049				127,143		

*Less than one dollar. d Decrease.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE, 1916

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses							Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.				
Alabama & Vicksburg	143	$87,361	$34,888	$133,418	$16,673	$23,141	$3,807	$48,641	$2,198	$6,028	$99,852	$33,566	$16,041	$16,345	$9,891
Alabama Great Southern	309	375,712	102,717	512,129	17,572	169,405	16,219	130,966	3,102	8,330	343,308	168,821	17,063	151,573	53,856
Arizona Eastern	378	243,446	43,091	307,757	79,391	29,072	2,177	55,671	2,247	10,726	179,589	128,168	19,264	107,729	16,189
Atchison, Topeka & Santa Fe	8,648	7,218,954	2,415,368	10,397,702	1,677,373	1,619,678	192,839	2,782,806	.....	186,773	6,449,497	3,948,205	428,161	3,514,470	753,330
Atlanta & West Point	93	50,097	38,028	107,298	11,261	15,940	5,875	59,626	2,011	4,493	98,476	8,822	9,786	—1,772	—29,404
Atlantic Coast Line	4,706	1,901,301	582,867	2,781,529	305,979	500,028	54,566	912,920	7,440	77,886	1,857,726	923,803	147,831	774,193	371,331
Baltimore & Ohio Chicago Terminal	79	.....	631	174,653	24,110	22,477	1,030	72,566	1,786	12,433	133,454	41,199	16,689	23,198	—8,738
Baltimore, Chesapeake & Atlantic	88	69,253	34,503	109,935	11,979	13,760	2,110	55,494	.....	3,098	86,438	23,496	2,243	21,253	9,669
Bangor & Aroostook	632	231,079	50,082	298,822	56,300	54,015	2,844	85,155	5,018	10,929	214,173	84,649	12,555	71,427	—66,493
Belt. Ry. Co. of Chicago	31	.....	.....	244,568	18,441	29,865	1,557	94,565	.....	6,302	150,730	93,838	15,549	78,289	4,762
Bessemer & Lake Erie	205	1,319,441	31,710	1,370,350	154,761	191,855	12,039	276,695	.....	16,303	637,483	732,867	22,005	710,860	—7,368
Buffalo, Rochester & Pittsburgh	586	908,012	100,435	1,056,363	163,548	262,629	12,252	331,123	1,328	22,658	793,538	262,826	20,000	242,825	—19,503
Canadian Pacific Lines in Maine	234	59,423	16,761	86,717	28,389	11,200	5,308	30,183	.....	4,238	79,317	7,400	309	7,091	10,455
Carolina, Clinchfield & Ohio	283	238,679	21,121	267,236	22,819	45,074	17,982	49,014	.....	13,729	147,556	119,680	4,681	114,998	46,962
Carolina, Clinchfield & Ohio of S. C.	18	9,791	1,115	11,315	786	102	2,532	2,845	.....	1,591	7,777	3,537	600	2,938	1,362
Central New England	301	402,188	41,663	464,281	22,275	43,103	886	243,685	.....	4,548	314,489	149,792	10,642	139,136	29,065
Central of Georgia	1,924	602,358	253,183	959,545	158,226	188,535	36,068	305,108	1,693	38,148	725,563	233,982	54,555	175,966	109,972
Charleston & Western Carolina	341	127,198	25,348	158,410	—5,866	22,133	3,993	49,100	.....	4,418	73,779	84,631	20,122	64,509	32,058
Chesapeake & Ohio Lines	2,386	3,296,029	550,151	4,221,824	472,771	790,224	55,025	1,156,632	29,099	83,298	2,582,797	1,639,027	142,415	1,496,300	416,696
Chicago & Alton	1,052	946,993	413,928	1,471,378	179,623	210,398	41,786	474,016	10,812	31,729	936,882	534,496	60,353	473,925	102,281
Chicago & Eastern Illinois	1,136	951,071	258,416	1,319,058	191,622	225,960	25,598	433,250	7,712	39,214	920,025	399,033	62,500	336,267	294,628
Chicago & Erie	270	577,015	62,454	690,506	64,015	68,833	19,682	238,629	2,295	17,534	410,621	279,884	22,230	257,654	141,526
Chicago & North Western	8,108	5,152,009	2,046,926	8,118,644	1,183,899	1,180,750	113,107	2,659,442	63,369	159,778	5,332,822	2,785,822	446,527	2,338,618	479,742
Chicago Junction	13	.....	.....	203,892	20,888	21,791	1,156	114,853	.....	4,884	163,573	40,320	3,871	36,449	13,362
Chicago, Milwaukee & St. Paul	10,210	6,249,865	1,918,652	9,163,746	1,880,989	1,344,365	191,091	3,146,297	54,351	173,508	6,776,978	2,386,768	492,359	1,888,268	—933,567
Chicago, Peoria & St. Louis	255	111,130	23,887	143,353	16,831	26,522	5,681	59,987	.....	5,358	114,380	28,973	7,317	21,656	24,754
Chicago, Rock Island & Gulf	477	171,548	46,535	236,669	45,471	42,052	10,009	85,927	1,156	9,563	194,061	42,608	10,000	32,590	52,021
Chicago, St. Paul, Minn. & Omaha	1,753	975,083	507,899	1,614,545	276,546	152,104	27,581	552,519	14,902	41,474	1,063,677	550,868	85,512	463,808	103,848
Cincinnati, Hamilton & Dayton	622	741,165	103,563	943,359	143,913	176,866	17,715	321,442	3,140	40,908	697,967	245,392	32,060	213,299	160,790
Cincinnati, Indianapolis & Western	322	141,492	46,189	205,908	35,170	18,957	6,098	74,155	552	6,471	141,118	64,790	9,656	55,134	.....
Cincinnati, New Orleans & Tex. Pacific	337	748,313	156,061	971,407	85,578	264,081	24,752	239,956	5,741	24,460	643,669	327,738	32,147	295,528	87,403
Cincinnati Northern	246	139,177	17,140	161,534	27,330	29,195	3,297	47,731	.....	2,689	110,241	51,292	6,000	45,293	28,684
Cleveland, Cincinnati, Chic. & St. Louis	2,384	2,580,609	924,910	3,845,511	422,988	780,762	82,239	1,232,933	24,963	76,571	2,614,099	1,231,411	135,000	1,096,162	646,727
Colorado Midland	338	92,409	19,197	121,281	29,061	26,062	8,510	54,426	1,189	5,020	124,268	—2,988	5,852	—8,839	—2,459
Cumberland Valley	164	204,120	56,217	274,212	34,197	7,876	4,310	80,282	1,062	11,630	138,749	135,463	5,960	129,504	28,427
Delaware & Hudson Co.—R. R. Dept.	886	1,848,258	249,898	2,231,606	176,832	466,460	36,651	744,821	9,287	78,347	1,512,397	719,209	58,650	660,559	—6,368
Delaware, Lackawanna & Western	955	3,210,150	747,331	4,413,932	559,029	637,254	91,006	1,372,420	35,149	108,285	2,800,368	1,613,564	202,500	1,410,781	292,710
Detroit & Mackinac	393	72,556	26,700	105,047	14,420	21,064	2,561	34,556	96	3,621	76,318	28,729	8,024	20,705	7,103
Detroit & Toledo Shore Line	81	114,496	.....	116,570	6,991	5,700	1,498	32,464	.....	3,453	50,107	66,464	6,924	58,346	7,442
Duluth & Iron Range	277	1,003,671	22,049	1,042,942	114,559	82,117	1,317	191,696	2,107	11,415	402,363	640,579	61,654	578,926	141,041
Duluth, Missabe & Northern	411	1,877,821	36,081	1,989,912	226,559	116,352	2,517	279,366	1,263	11,264	637,321	1,352,592	103,900	1,248,692	424,631
Duluth, South Shore & Atlantic	628	214,938	95,771	342,832	78,178	35,899	7,309	100,138	4,058	11,573	237,155	105,677	22,815	82,863	34,994
Duluth, Winnipeg & Pacific	187	111,700	18,890	134,535	14,111	16,348	2,170	44,917	656	6,041	84,244	50,291	6,727	43,564	13,279
El Paso & Southwestern Co.	1,027	820,187	160,701	1,025,990	72,752	88,404	20,083	231,162	6,007	25,075	443,470	582,520	45,711	536,805	243,025
Elgin, Joliet & Eastern	800	1,108,090	5	1,182,637	126,794	324,879	6,610	327,543	.....	21,608	807,090	375,547	39,525	336,022	—22,670
Erie	1,988	4,430,629	838,093	5,548,088	571,871	1,312,028	97,790	2,039,791	39,114	129,332	4,184,856	1,663,232	194,147	1,468,953	40,221
Florida East Coast	745	383,283	116,867	565,106	69,850	76,806	12,493	162,763	3,276	18,825	343,034	222,072	38,967	182,970	96,179
Galveston, Harrisburg & San Antonio	1,351	780,366	243,453	1,109,134	152,401	143,256	30,929	404,612	9,810	32,509	761,159	347,975	48,502	298,930	167,465
Galveston Wharf	14	.....	.....	119,026	1,117	3,093	333	27,837	18,700	372	51,452	67,574	19,109	48,424	—7,550
Georgia, Southern & Florida	395	119,183	48,480	195,735	19,771	59,805	9,134	63,851	.....	8,634	161,173	34,562	12,229	21,063	—5,922
Grand Rapids & Indiana	575	300,811	140,157	480,753	65,576	88,636	12,254	184,243	1,368	15,044	367,120	113,633	24,081	89,541	5,633
Gulf, Colorado & Santa Fe	1,938	745,714	246,472	1,100,332	282,048	184,745	30,205	447,609	.....	52,020	995,447	104,884	65,836	36,915	—68,628
Houston, East & West Texas	191	66,977	29,120	104,476	3,871	8,180	2,351	39,113	748	3,226	56,983	47,493	6,608	40,858	31,686
Houston & Texas Central	895	298,293	124,572	465,606	82,987	25,731	18,323	176,021	3,707	19,076	325,243	140,363	31,017	109,195	70,531
Illinois Central	4,767	4,049,386	1,229,507	5,905,514	646,875	1,314,105	109,234	1,762,972	35,344	159,459	4,016,733	1,888,781	397,521	1,489,398	1,008,848
Indiana Harbor Belt	110	.....	.....	378,210	68,699	51,366	2,851	150,683	.....	8,186	281,785	96,425	7,231	89,194	9,776
International & Great Northern	1,159	462,678	164,136	692,005	127,949	180,422	21,988	290,560	4,884	29,362	637,747	54,257	30,000	24,235	33,589
Kanawha & Michigan	177	283,055	31,682	322,642	37,481	79,141	3,034	77,851	44	7,717	205,269	117,373	13,925	103,447	13,328
Kansas City Southern	837	686,378	135,961	911,145	89,925	138,296	33,417	270,010	.....	32,623	561,943	349,202	48,376	300,187	162,036
Lake Erie & Western	900	514,294	59,816	505,483	76,311	82,069	14,399	195,106	.....	13,956	381,842	223,641	25,000	198,599	119,205
Lehigh & Hudson River	97	175,629	3,729	193,252	12,881	22,701	1,526	54,345	.....	6,302	97,754	95,498	6,210	89,288	36,445
Lehigh & New England	296	229,006	1,450	247,651	31,015	39,669	2,812	70,128	.....	7,668	151,248	96,402	8,820	87,582	—49,101
Lehigh Valley	1,444	3,495,958	424,492	4,228,744	306,347	918,663	89,370	1,483,912	15,131	128,556	2,939,280	1,289,464	139,593	1,149,360	176,665
Long Island	397	364,564	852,749	1,408,469	138,712	135,005	11,312	509,130	7,167	38,915	838,401	570,068	70,461	498,745	37,554

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE, 1916—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Louisiana & Arkansas	279	$114,488	$17,347	$135,910	$22,634	$18,891	$3,705	$35,237	.....	$4,300	$84,767	$51,142	$7,920	$42,932	$10,527
Louisiana Ry. & Navigation Co.	351	126,534	23,987	163,811	27,561	24,812	6,971	52,425	.....	6,359	118,128	45,683	9,455	36,215	933
Louisiana Western	208	118,867	52,262	186,462	33,587	30,239	6,905	54,598	$1,997	6,250	133,574	52,888	15,383	37,456	5,335
Louisville, Henderson & St. Louis	200	93,885	35,781	138,580	22,629	15,610	4,961	40,855	.....	3,050	87,105	51,475	4,077	47,225	30,117
Maine Central	1,220	694,106	330,936	1,106,184	157,192	128,405	16,828	358,554	3,510	31,249	695,535	410,650	68,047	341,797	88,793
Michigan Central	1,803	2,325,974	1,076,611	3,896,759	503,230	531,642	66,832	1,301,309	57,734	76,471	2,537,218	1,359,541	140,000	1,219,154	203,155
Midland Valley	385	116,416	39,657	164,305	31,674	15,815	2,388	42,451	.....	7,736	99,620	64,685	3,581	60,987	38,838
Minneapolis & St. Louis	646	606,450	176,004	832,757	24,782	145,242	18,734	294,417	.....	26,591	509,767	322,990	42,095	280,654	26,970
Missouri & North Arkansas	365	53,466	34,216	95,372	21,384	10,272	3,013	33,931	.....	5,645	74,245	21,127	8,218	12,909	32,424
Missouri, Kansas & Texas System	3,865	1,639,131	778,082	2,644,047	433,669	650,277	58,476	912,563	17,168	109,058	2,181,049	462,998	129,191	330,397	—27,166
Missouri, Oklahoma & Gulf Ry. of Texas	125	15,267	415	15,874	3,548	2,947	1,723	9,311	.....	1,516	19,044	—3,170	361	—3,530	14,954
Mobile & Ohio	1,122	862,688	100,007	1,021,010	85,146	185,707	37,656	340,220	2,540	30,444	635,949	385,062	40,211	344,626	58,293
Monongahela	108	165,945	9,006	178,119	37,273	15,249	1,043	37,689	.....	4,239	95,493	82,625	4,000	78,625	.....
Morgan's La. & Texas R. R. & S. S. Co.	405	239,832	84,482	354,366	58,384	56,453	11,154	115,442	1,974	12,057	255,456	98,911	29,167	69,603	101,407
Nashville, Chattanooga & St. Louis	1,231	693,663	227,972	1,003,101	112,780	174,971	57,064	360,048	12,115	39,180	753,400	249,700	35,251	213,946	65,365
Nevada Northern	165	167,824	12,648	185,279	27,202	14,674	567	33,580	77	4,987	81,086	104,193	6,185	98,009	25,597
New Orleans & North Eastern	204	233,794	47,893	311,963	30,772	41,374	11,901	84,972	7,233	12,867	187,396	124,567	21,701	101,387	28,811
New Orleans, Mobile & Chicago	402	143,064	22,936	173,605	29,829	27,694	4,820	56,458	187	6,292	125,095	48,510	6,499	41,975	12,923
New York Central Railroad	6,093	11,591,845	4,824,546	19,187,721	1,966,701	3,221,094	274,304	6,039,955	254,154	431,909	12,188,117	6,999,604	778,872	6,217,929	842,349
New York, Chicago & St. Louis	570	1,005,280	129,858	1,186,570	106,924	188,752	45,629	448,653	5,016	25,237	820,210	366,360	42,936	323,415	12,955
New York, New Haven & Hartford	2,005	3,421,310	2,639,804	7,080,328	787,682	973,697	62,121	2,665,964	93,114	169,209	4,751,353	2,328,975	197,255	2,130,884	—519,354
New York, Ontario & Western	568	456,371	145,132	726,018	59,940	59,402	10,011	273,391	.....	26,048	428,791	297,227	24,902	272,324	87,107
New York, Philadelphia & Norfolk	112	428,399	40,820	506,569	36,970	85,243	5,027	162,749	4,283	10,986	304,783	201,785	8,405	193,340	69,945
New York, Susquehanna & Western	140	168,327	52,900	266,411	27,759	35,082	2,176	124,209	.....	6,353	195,561	70,850	14,100	56,749	—27,606
Norfolk & Western	2,086	4,313,334	488,053	4,987,886	596,734	853,057	64,632	1,216,850	10,492	78,945	2,811,866	2,176,020	175,000	2,000,653	442,672
Norfolk Southern	908	296,556	94,301	416,212	50,235	53,187	7,347	130,816	151	17,419	259,155	157,057	10,521	146,453	79,609
Northwestern Pacific	507	191,018	211,923	454,992	48,733	32,640	8,929	122,879	986	8,505	221,057	233,935	16,956	216,940	87,289
Oregon-Washington R. R. & Nav. Co.	2,053	1,028,542	434,789	1,614,343	326,746	218,260	45,536	496,354	24,456	72,054	1,172,276	442,066	93,800	347,723	—170,189
Panhandle & Santa Fe	670	311,704	75,905	409,035	61,431	63,938	4,010	113,685	.....	10,383	253,168	155,867	11,050	144,670	74,028
Pennsylvania Company	1,758	5,024,730	1,087,527	6,812,720	863,164	1,174,981	88,261	2,083,742	40,745	147,566	4,397,242	2,415,479	288,311	2,127,110	395,267
Pennsylvania Railroad	4,541	13,582,753	3,932,583	19,384,193	2,331,578	3,696,787	224,535	6,554,471	259,010	451,215	13,517,595	5,866,598	677,841	5,188,755	674,781
Pere Marquette	2,249	1,229,847	359,675	1,781,363	256,537	358,592	40,451	643,049	4,851	40,488	1,343,751	437,612	44,810	392,207	162,766
Philadelphia, Baltimore & Washington	717	1,159,539	780,263	2,143,142	262,909	390,877	31,469	809,591	115	53,017	1,547,977	595,165	59,362	535,803	192,394
Pittsburgh & Lake Erie	225	1,606,115	158,681	1,909,402	181,980	291,637	14,926	463,118	3,834	33,812	989,307	920,095	58,700	861,395	154,393
Pittsburgh, Cincinnati, Chic. & St. L.	1,489	2,777,374	827,688	4,116,924	604,982	863,488	70,267	1,377,757	28,321	107,568	3,050,890	1,066,034	180,470	885,455	200,210
Rutland	468	183,324	100,175	329,621	42,212	51,492	10,851	114,566	1,082	7,496	227,699	101,922	17,217	84,705	12,588
St. Joseph & Grand Island	258	132,017	26,288	172,019	38,709	22,818	4,904	51,376	783	5,776	124,368	47,652	7,962	39,688	15,371
St. Louis, Brownsville & Mexico	548	134,185	63,426	213,281	33,840	26,289	8,320	83,896	.....	32,083	180,618	32,663	9,782	22,878	741
St. Louis Merchants' Bridge Terminal	9	.....	634	178,900	35,985	11,061	784	81,488	.....	7,393	136,711	42,188	7,600	34,571	5,052
St. Louis Southwestern	943	488,427	107,885	639,377	56,669	130,958	31,557	169,016	3,047	24,460	415,444	223,933	42,056	181,718	42,267
San Antonio & Aransas Pass	724	176,285	76,519	272,801	45,751	42,041	8,081	154,637	.....	11,943	262,252	10,549	9,828	526	10,588
San Pedro, Los Angeles & Salt Lake	1,154	700,053	291,549	1,082,144	111,558	136,920	32,472	262,089	21,746	26,677	590,637	491,506	49,269	442,212	121,007
Seaboard	3,449	1,342,728	355,691	1,890,601	239,462	299,320	70,311	646,867	8,613	67,423	1,331,996	558,606	91,708	465,604	.....
Southern	7,027	3,658,236	1,453,926	5,678,124	601,357	958,263	158,245	1,853,046	39,323	172,584	3,755,479	1,922,645	249,848	1,666,255	526,820
Southern Pacific	6,950	7,118,437	2,534,412	10,568,130	1,028,869	1,281,131	175,871	3,299,790	153,804	230,865	6,107,752	4,460,379	448,202	4,008,483	681,839
Staten Island Rapid Transit Co.	11	54,814	30,688	114,756	16,019	10,017	955	40,752	.....	1,972	69,713	45,043	5,500	39,538	—9,568
Tennessee Central	294	96,884	34,921	140,052	18,487	21,846	5,516	47,125	.....	6,821	99,797	40,255	3,307	36,854	9,394
Terminal R. R. Ass'n of St. Louis	37	.....	1,920	265,906	36,279	16,883	876	79,611	.....	6,318	139,967	125,938	27,488	98,450	28,015
Texas & New Orleans	468	264,567	84,698	385,031	55,363	51,672	8,584	119,833	9,938	9,735	254,457	130,574	19,816	110,566	115,719
Texas & Pacific	1,944	943,369	362,938	1,458,835	92,560	279,676	44,497	639,527	7,797	57,576	1,118,360	340,474	72,000	262,994	236,856
Toledo & Ohio Central	436	419,033	49,983	507,250	81,785	133,488	7,404	178,726	1,624	11,405	414,432	92,818	25,831	66,972	—38,815
Toledo, Peoria & Western	248	52,824	33,495	102,362	16,387	18,563	2,608	37,160	.....	4,063	78,782	23,581	6,500	17,080	27,682
Toledo, St. Louis & Western	451	420,442	48,032	496,576	45,661	72,286	17,266	153,615	.....	8,914	296,958	199,617	7,126	189,755	127,724
Union R. R. of Baltimore	8	140,262	23,943	166,247	13,573	.....	.....	5,781	.....	2,187	21,540	144,706	6,017	138,689	56,515
Union R. R. of Pennsylvania	32	.....	.....	569,381	48,149	94,589	113	190,193	.....	4,723	337,589	231,791	8,501	223,291	3,235
Vandalia	917	695,520	222,958	1,041,300	164,760	222,365	27,617	371,419	12,773	29,689	828,624	212,676	40,363	172,235	29,803
Vicksburg, Shreveport & Pacific	171	73,845	38,082	125,247	22,362	32,860	3,614	38,743	2,045	5,967	105,322	19,925	11,185	8,255	1,507
Virginian	505	556,885	37,737	634,583	77,813	96,633	5,609	123,530	12,203	15,057	330,471	304,112	26,900	277,154	97,215
Wabash	2,519	2,094,816	630,659	2,992,061	297,986	491,427	99,834	1,065,157	20,779	69,393	2,025,271	966,790	94,344	872,121	743,764
West Jersey & Seashore	358	196,402	394,850	646,515	100,889	89,950	12,785	252,637	2,556	16,048	474,866	171,649	37,007	134,643	16,772
Western Maryland	689	831,588	86,495	993,162	102,517	158,536	20,936	272,482	9,817	22,758	586,363	406,800	35,240	371,362	103,024
Western Pacific	941	517,076	115,140	672,340	107,877	53,164	21,168	185,123	9,766	18,125	395,223	277,117	31,710	245,304	50,807
Western Ry. of Alabama	133	51,820	33,904	98,936	18,796	20,277	6,277	11,893	1,825	4,897	63,948	34,987	-5,341	28,853	27,767
Yazoo & Mississippi Valley	1,382	889,380	187,146	1,134,885	112,372	153,892	21,394	403,056	1,698	33,557	723,880	411,006	71,588	339,348	116,470

"Safety First" Interrogatively

Is there not really a better slogan for Safety First than Safety First? The London Omnibus Company has decided to adopt in its place the suggestive question—IS IT SAFE?

The main idea underlying the words "Is It Safe?" is that if the question be mentally asked of oneself in a perilous moment, it instantly directs attention to the dangers present, wherein the instinct of self-preservation will assert itself, and this is in most cases all that is necessary to induce watchfulness and care. The slogan "IS IT SAFE?" was adopted by the Great Western Railway of England three years ago, and it is thought by the management that it meets with more general and hearty co-operation on the part of employees, than the American slogan "Safety First."—*The Frisco-Man.*

The Jersey City Disaster

Preliminary investigations of the "Black Tom" explosion of July 30, by agents of the Interstate Commerce Commission, have brought out no evidence of any violation of the commission's rules for the transportation and handling of explosives.

The Jersey City commissioners of public safety, dissatisfied with the meagre results of all investigations about the cause of the disaster, notified the railroads on August 1 that no explosives whatever would be allowed to come into the city; and policemen with red flags were stationed on the lines of all the railways at the city limits, to stop freight trains. A number of trains were stopped and the conductors were called upon to show their bills, revealing the contents of every car; but the railroads had voluntarily complied with most of the wishes of the city officers, and the embargo placed by the police had little effect.

On Sunday evening, August 6, one week from the time of the "Black Tom" disaster, a fire in the yards of the Lehigh Valley, not far from "Black Tom," destroyed a number of freight cars which, with their contents and other property, made up a loss said to aggregate $150,000. By the explosion of an empty tank car, which had contained naphtha, the residents in the vicinity were greatly alarmed, the impression being that a repetition of the "Black Tom" disaster was impending.

Ventilated "Side-Door Pullmans" in 1863

James McKenna, of Northampton, Mass., writing to the Springfield Republican, gives some experiences of 53 years ago, which are of interest in connection with recent criticisms of the accommodations afforded the state militiamen on their journeys from the eastern states to Texas. Mr. McKenna says:

I notice what Senator Warren of Wyoming had to say in the Senate regarding his experience, riding in freight cars on the return of his regiment, the 49th Massachusetts, from the Civil War. I knew the senator as a private of Company C, and I was a member of Company I of the same regiment, and recall our journey from New Orleans to Pittsfield.

On the 8th of August, 1863, the term of enlistment having expired, the regiment embarked at Baton Rouge on a steamer for New Orleans, expecting to take a steamer for New York. There it was learned that the expected transportation had been given to another command, and the 49th embarked on the steamer Temple for Cairo, Ill., which was reached on the 16th. Here we waited for cars, which arrived about noon on the 18th, and these, as the senator states, were "stock cars," and clean, with board seats lengthwise of the car; and about six inches of clean, sweet straw covered the car floor. To me the change from the dirty, ill-smelling steamer was very welcome. I sat at the door of the car till darkness came, viewing the country. Then, lying down in the straw, I knew no more till daylight came and we were at Mattoon, Ill., where the loyal, generous people gave us a good breakfast of sandwiches, eggs and coffee. Here about half the regiment were given passenger cars. Many of the "boys" rode on the tops of the cars—the stock cars were best for this—viewing the fields of corn which grew luxuriantly right up to the edges of the railroad. We stopped at dinner-time and were fed by the people. I remember one man coming into the car with a bushel of boiled eggs.

At Terre Haute, Ind., we were supplied with passenger cars—two men to a seat, which I found very cramped after the roomy stock cars. At night many had to be in the aisle to obtain sleep. We had dinner at Indianapolis, supper at Cleveland. Morning found us in Buffalo, N. Y., where breakfast awaited us. We had supper at Utica, and arrived in Albany about midnight. There we had coffee and sandwiches, after which we washed up and changed to our best.

About 6 a. m. of the 22d we crossed on the ferry boat to East Albany, where passenger cars awaited us with two locomotives run by two "Bills"—Horton and Thompson, both of Pittsfield. Arriving in Pittsfield about 10 o'clock a welcome awaited us that requires an abler pen than mine to do justice to.

Pennsylvania Railroad Assists Dependents of Employees in National Guard

Distribution of the funds needed for the relief of the families and dependents of Pennsylvania Railroad employees, who have been called into military service on the Mexican border, commenced July 31. The first instalment of the relief money will cover the month of July. Thereafter, payments will be made semi-monthly, as in the case of wages, and in all instances will be placed directly in the hands of the wife, mother or other beneficiary. The payments will be made out of the fund of $100,000 set aside by the board of directors for this purpose.

To insure the proper distribution of the relief money an individual inquiry under the direction of the division superintendent was made in the case of every one of the more than 800 employees of the Pennsylvania Railroad, who are now at the front. The inquiry showed that about 300 of the men under arms have families or other dependents who will require relief during the absence of the employees from their regular work.

In addition, the railroad is paying the dues of every member of the voluntary relief fund who is at the front, thus fully protecting his disablement and death benefits in his absence.

Several men, whose families will receive relief, had been on the payroll less than a week when their regiments were ordered to camp. One man had worked only three days for the railroad. In a number of other cases the length of service was less than a month. In many instances also, the employees were not members of the national guard, but voluntarily enlisted after the call of the President.

Employees' Movement to Prevent Trainmen's Strike

Within the last two weeks an important movement has been started on behalf of the more than 80 per cent of employees of railways who have no part in the threatened strike of the brotherhoods of train employees. It originated with Robert T. Frazier, Jr., an employee of the valuation department of the Nashville, Chattanooga & St. Louis, and its purposes are expressed in a petition which has already been signed by 5,500 of the 8,000 employees of that road who are outside the trainmen's brotherhoods. Though the movement was at first a local one, starting in the last days of July, it has already spread to northern roads, and is making vigorous headway among several of the larger systems leading out of Chicago. The petition in substance is as follows:

"We, the undersigned citizens of the state of ....., and among those comprising the more than 80 per cent of the employees of the railways of our state and country, being confronted with the possibility of an entire paralyzation of the railways of the country by the proposed general strike of the four orders of trainmen, a group of less than 20 per cent of the entire number of railway employees, and the consequent curtailment of income of us, the more than 80 per cent, to whom such a curtailment would be ruinous, and fully realizing that under this great government where the ruling doctrine is 'the greatest good to the greatest number,' we, the large majority, more than 80 per cent of the people to be directly injured by such destructive methods of the few who happen to be placed in a position where they can use them, have a clear and definite right to be protected (the general public and all other industries seriously endangered also having that right), do earnestly petition you, our senators and representatives individually and as the congress of the nation, and pray that some definite legislative action be taken whereby the vast majority of the people of the country shall be protected from a destructive interruption of interstate commerce due to wholly selfish action of a small group of men, and that all differences which may arise between railway and employee shall be settled by proper arbitration. In this way you would

recognize the fundamental principle of the republic that no small group of men ought to be permitted directly or indirectly to conspire to an end calculated to benefit them only, and directly or indirectly work wrong and loss upon the great majority."

In promoting this movement Mr. Frazier states his own position and that of other employees not included in the brotherhoods of trainmen, as follows:

"The trainmen involved in the present discussion represent only 16 per cent of the total number of the employees of the railways. They receive more than double the average wage of the remainder of us. If a strike is called, it means absolutely that all construction work will cease, all machinists' work in the shops must necessarily be suspended and the large majority of the maintenance and clerical forces also suspended. Sixteen per cent of the employees of one great industry, therefore, are, for selfish motives, threatening to paralyze that industry, thus undermining the source of livelihood of the other 84 per cent, to say nothing of the ruinous injuries to be wrought in all other industries of the country; and the 84 per cent has not been given a hearing.

"I am one of the 84 per cent of railway employees vitally interested in this question and ask for the right due us and the public for such a hearing. We have families depending upon us for support to such extent that our reserve is practically nothing. In other words, we must have an uninterrupted income to avoid acute financial distress. We are dependent upon the railways of America for this uninterrupted income, and if the income of the railways is materially curtailed, as it will be by this proposed strike, we, the 84 per cent, will suffer serious loss.

"We do not presume to say one way or the other whether the demands made by the 16 per cent should be granted or not; but what we do say is that this question so vitally involves the vast majority, the 84 per cent, who stand only to suffer loss as a result of the strike, that in justice to them and the great mass of the public, this question should be settled by arbitration. We should not be made to suffer for the purpose of obtaining an increase of pay (for that is the sum and substance of the demands) of that 16 per cent already receiving wages far in excess of the average received by us, the 84 per cent. We appeal to the sense of justice of the American people of whom we are, and with whom we rest our case, shall this injustice be permitted?"

The movement is confined wholly to employees. Beyond the necessary consent obtained from the managements for the circulation of the petitions, officials have declined to stand sponsor for it. The plan is to place the leadership in the hands of one employee of each road who individually and with the assistance of other employees attends to the circulation of the petition and the explanation of its purpose. It is stated that practically no opposition has been met from any source, so far as the movement has gone, even among relatives of trainmen. Among the 287 employees at one terminal of the N. C. & St. L., the petition was signed by all but two; and of less than 1,400 shop employees, 1,289 signed the petition.

Motor Boat for Inspector of Lighter Service

The inspector of lighter service in New York harbor for the Lehigh Valley Railroad now goes about in a 32-foot gasoline power boat, capable of making 12 miles an hour. The boat is named "The Scout," and the man who runs it has a pilot's license. Lighterage inspectors employed by all of the larger railroads check up the car floats, grain boats, lighters and barges placed in slips and at piers all around the New York and Brooklyn shores. They are men in authority who can solve problems for the boat captains and see that the boats are well managed and that no time is being wasted in loading and unloading. With the boat, this inspector replaces a number of "runners" and for the first time the Lehigh Valley has a daily report on all its boats. The result has been not only a saving financially but a considerable gain in traffic efficiency for the railroad and the shippers.

Freight Traffic Officers

The American Association of Freight Traffic Officers held its twelfth annual meeting at Hot Springs, Va., last week. George A. Blair, assistant freight traffic manager of the Chicago, Milwaukee & St. Paul was elected president of the association for the ensuing year, in place of Brent Arnold.

Railway Signal Association

Final arrangements for the annual convention of the Railway Signal Association to be held at Mackinaw Island, Mich., from September 12 to 14, are rapidly nearing completion. A circular issued by the association contains information concerning transportation to the convention of value to those contemplating the trip. Special accommodations for delegates and their friends on trains from the East, West and South have been arranged.

The subjects which will be presented by the committees for discussion at the convention are as follows:

Harmonizing Committee.—Harmonizing of Specifications. General Provisions of Specifications for Signal Installations. General Electrical Requirements. Detail Provisions.

Committee I.—Signaling Practice. Requisites for Switch Indicators (Revision). Capacity of Single Track (Second Installment). Analysis of the Signal Schemes. Semaphores in the Left-hand Quadrant.

Committee VI.—Standard Designs Standard Drawings (New and Revised).

Committee IX.—Wires and Cables. Definition of Principal Terms Used in Wire and Cable Specifications. Specifications for Aerial Aluminum Cable Steel Reinforced. Specifications for Friction Tape (Revision). Specification for Rubber Insulated Tape (Revision).

Committee X.—Storage Battery and Charging Equipment. Specifications for Lead Type Portable Storage Battery. Specifications for Composite Type Stationary Storage Battery. Standard drawings for use in connection with Storage Batteries, as follows: 1174, Line Charging Panels (Revised). 1175, Hydrometer (New). 1343, Concrete Storage Battery Box (Revised). 1379, Generator Charging Panel for 600 Volts or less (New). 1420, Circuits for Line Charging Panels (New).

Committee VII.—Direct Current Relays. Recommendations as to Resistances in Relays.

Committee VIII.—Electric Railways and A. C. Signaling. Historical Data on A. C. Signal Installations. Specifications for Single-Phase Line Transformers. Specifications for Alternating Current Relays.

Special Committee.—Electrical Testing. Progress Report on Relay Post Marking.

Committee IV.—D. C. Automatic Block Signaling—Low Voltage. Specifications for Capping and Trunking. Specifications for D. C. Automatic Block Signaling. Specifications for Installation of Fibre and Metal Conduit.

Committee II.—Mechanical Interlocking. Specifications for Mechanical Interlocking (Revised). Standard Drawings for Turns in Pipe Lines, etc. Specifications for Electro-Mechanical Interlocking Requirements for Protection of Traffic at Movable Bridges

Committee III.—Power Interlocking. Specifications for Petroleum Asphaltum. Typical Circuit Plans for Electro-Pneumatic Interlocking.

Proposed Amendment to the Constitution.—Article IV, Section 1. Dues.

American Electric Railway Association

The thirty-fifth annual convention of the American Electric Railway Association and its affiliated associations—the American Electric Railway Accountants' Association; the American Electric Railway Engineering Association; the American Electric Railway Claims' Association, and the American Electric Railway Transportation and Traffic Association—will be held at Atlantic City, October 9 to 13, 1916.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Annual convention, October 19-21, New Orleans, La.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, October 17, 18, Washington, D. C.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Annual meeting, August 16-18, 1916, Memphis, Tenn.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Annual convention, October 9-13, Atlantic City, N. J.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—H. G. McConnaughy, 165 Broadway, New York. Annual convention, October 9-13, Atlantic City, N. J.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, general secretary, 75 Church St., New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 17-19, New Orleans, La.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—Owen D. Kinsey, Illinois Central, Chicago. Annual meeting, August 24-26, 1916, Hotel Sherman, Chicago.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meteings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Annual convention, October 10, 1916, Waldorf-Astoria, New York.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—P. C. Jacobs, H. W. Johns-Manville Co., Chicago. Meetings with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, C. H. & D., Lima, Ohio. Next meeting, August 15-17, 1916, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1126 W. Broadway, Winona, Minn. Annual meeting, August 29 to September 1, Hotel Sherman, Chicago.

MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—F. W. Hager, Fort Worth & Denver City, Fort Worth, Tex. Next convention, October 17-19, Philadelphia, Pa.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next annual meeting, September 12-14, 1916, "The Breakers," Atlantic City, N. J.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Fire Ins. Agt., Mobile & Ohio, Mobile, Ala. Annual meeting, October 3-5, 1916, New York.

RAILWAY REAL ESTATE ASSOCIATION.—Frank C. Irvine, 1125 Pennsylvania Station, Pittsburgh, Pa. Annual meeting, October 11-13, 1916, Chicago.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Next annual convention, September 12-14, 1916, Grand Hotel, Mackinac Island, Mich.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W., Sterling, Ill. Next annual convention, September 19-22, 1916, New York.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Annual meeting, October 18-20, Washington, D. C.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga. Next meeting, October 19, 1916, Birmingham, Ala.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.

TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEWARK.—Roy S. Bushy, Firemen's Bldg., Newark, N. J. Regular meetings, 1st Monday in month, except July and August, The Washington, 559 Broad St., Newark.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Agent, Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings, bi-monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—W. S. Crilly, 620 South 7th St., St. Louis, Mo. Annual meeting, December 5, 1916, Noonday meetings, October to May.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, Ohio. Next meeting, September 5-8, 1916, Hotel Sherman, Chicago.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Grand Pacific Hotel, Chicago.

WESTERN SOCIETY OF ENGINEERS.—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

The Cleveland, Cincinnati, Chicago & St. Louis now runs passenger and sleeping cars through between Chicago, Ill., and Cairo.

The total freight passing through the Sault Ste. Marie canals during the month of July was 14,048,404 short tons, of which 2,969,953 tons were westbound, and 11,078,451 eastbound.

The Louisville & Nashville announces that, beginning September 1, it will sell mileage books at two cents a mile. Hitherto the company has accepted only those books of form "Z Z," or the "Penny Script" book, the prices of which are 2.5 cents a mile and 2.4 cents a mile, respectively.

A steamship load of Australian zinc concentrates consigned to the American Steel & Wire Company at Donora, Pa., arrived at San Francisco recently and was transferred into 141 cars and forwarded overland by the Atchison, Topeka & Santa Fe in four solid trains. From Chicago the freight went by the Pittsburgh, Cincinnati, Chicago & St. Louis. It is understood that this steamer will be followed by many others with similar shipments.

The New Zealand Shipping Company has established new steamship service through the Panama Canal, the first passage having been made on July 15 by the passenger steamship "Remuera" on the way from Wellington to London. This company's service has heretofore been around the Cape of Good Hope on the outward voyage from Great Britain, and around Cape Horn on the return voyage, the vessels going completely around the world on each voyage. It was intended to make use of the canal route some time ago, but the disturbance of conditions by the European war and the later closing of the canal had deferred the adoption of this route. The company has reported its intention of building new ships for the canal service.

The government egg car is touring Indiana. This car, in which the United States Department of Agriculture educates the farmers in egg candling, packing and chilling, is now on a tour over the lines of the Chicago, Indianapolis & Louisville in Indiana. The itinerary extends from Borden, August 7, to Sheridan, August 28. The demonstration car is in itself a complete refrigerating plant on wheels, with its own gasoline engine for operating the refrigerating blowers, which in the course of half an hour can lower the temperature of the cold room to 32 degrees. By the aid of models, shippers and railroad men are shown methods of stowing cases in cars so as to minimize damage in transit. Nine per cent of the eggs shipped to New York City alone are now cracked or mashed on the road, an enormous waste which raises the price to the consumer without benefiting the producer in any way. The government has carried out elaborate tests of different methods of stowing, and those that have been found most successful are discussed by the experts in charge. Information is given on the dressing, grading, precooling and packing of poultry.

Continued Congestion on the New Haven

The New York, New Haven & Hartford has notified the New York State Public Service Commission of a temporary increase in the rate of demurrage on freight cars, taking effect July 31 and expiring September 29. After five days the rate is to be $5 per car per day. Taking effect September 6, there will be an increase in the rate of storage on cotton in freight houses. The rate per day for the first 3 days will be five mills per 100 lb., minimum charge 25 cents; for the next five days 1 cent, and after eight days 2 cents per 100 lb.

The New Haven has given notice that the embargo which was placed July 26, for only one week, on freight from the west and south, has been continued until further notice.

EXPORTS TO SOUTH AMERICA DOUBLED.—Exports from the United States to South American countries were more than doubled during the past year.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The Chamber of Commerce of Milwaukee has filed a complaint with the Interstate Commerce Commission against increased rates on grain from Milwaukee to Buffalo and eastern points via the Great Lakes Steamship Line for export.

The Interstate Commerce Commission issued special orders on August 1, suspending, until November 29, numerous freight rate increases which were to have become effective on August 2. The suspensions include tariffs of western carriers increasing the minimum carload weight on oats from 30,000 to 40,000 lb., and on wheat flour from 40,000 to 64,800 lb. Other rates suspended include increases ranging from 1 to 3½ cents per hundred pounds on linseed oil products from Minneapolis, Minn., to various destinations, increases from ½ to 3½ cents per hundred pounds on lumber and forest products from Maine and points in Canada to New England and eastern New York, increases from 3 to 7 cents per hundred pounds in class rates from Maryland and Delaware to western lake ports and Minneapolis, and increases on grain from Indianapolis, moving via Cincinnati, by the cancellation of a commodity rate of 6.3 cents per hundred pounds.

Fruits and Vegetables from Texas Points

Opinion by Commissioner Hall:

Following The Ogden Gateway Case, 35 I. C. C., 131, the proposed cancellation of joint carload rates on fruits and vegetables from producing points on the St. Louis, Brownsville & Mexico in connection with the San Antonio, Uvalde & Gulf, International & Great Northern, Texas & Pacific, St. Louis, Iron Mountain & Southern, and Missouri Pacific, through Odem, Tex., is found to have been justified. (40 I. C. C., 673.)

Switching at Louisville, Ky.

Louisville Board of Trade v. Louisville & Nashville. Opinion by Commissioner Clark:

At Louisville, Ky., the Louisville & Nashville refuses to switch traffic for which it competes between connecting lines and industries located only on its tracks. It switches such traffic, however, between those industries and the Chesapeake & Ohio under a contract with the latter carrier:

The commission holds that the proviso in section 3 of the act is intended to protect a carrier's terminals against use by a competing carrier engaged in like business when granting such use would deprive the owning carrier of a road haul which it is prepared to perform, and is not limited to the question of physical entry upon such tracks or facilities of the power, equipment or employees of another carrier. Louisville, Nashville & Central Stock Yards Company, 212 U. S., 132.

It finds, however, that the switching for the Chesapeake & Ohio and the refusal to switch for all other connecting carriers at Louisville is unduly preferential of the former and unduly prejudicial to the latter, their patrons and their traffic.

Commissioners Meyer, Hall and McChord dissent. (40 I. C. C., 679.)

Cars for Meats from Argentina

B. Frankfeld & Co. v. New York Central et al. Opinion by the commission:

The complainants, importers and dealers in beef, mutton, lamb, etc., produced in Argentina and imported through New York, allege that the trunk lines violate the act in that among other things, they fail to furnish suitable cars for the shipment of chilled meats. The meats imported by complainants are fresh, and are either chilled or frozen, the former having a temperature of 29½ to 30½ deg. and the latter from 15 to 20 deg. Fahrenheit. Frozen meats may be piled in vessel or car and offer no peculiar difficulties in transportation, requiring only clean equipment and ordinary refrigeration. Chilled meats cannot be piled, but must be suspended from hooks. The refrigerator cars owned by the larger American meat-packing companies are equipped with hooks which when in use depend from rails which sustain the car lading. Those cars are also provided with racks which prevent the meat, whether frozen or chilled, from coming into contact with the car floors, this or some similar protection being required by governmental regulation. The refrigerator cars owned by the defendant railway companies are not equipped with either rails or hooks, with the exception of about 140 cars owned by the New York Central, which are provided with rails only.

The commission finds that the refusal of defendants to provide cars specially equipped with hooks and racks is not unreasonable. Commissioner McChord dissents. (40 I. C. C., 555.)

Passenger Fares Between St. Louis and Points in Illinois

Business Men's League of St Louis v. Atchison, Topeka & Santa Fe et al. Opinion by Commissioner Daniels:

Before the increase of one-half cent per mile in interstate fares and 5 per cent in interstate rates following the Five Per Cent case, 31 I. C. C., 351, the passenger and freight charges between St. Louis and stations in Illinois were substantially the same as between East St. Louis, Ill., and the same Illinois points. A failure to increase correspondingly the intrastate fares and rates in Illinois has resulted in charges between Illinois points and St. Louis and East St. Louis which it is alleged constitutes discrimination. In this case only the passenger fares are considered, freight rates being left for a separate report.

The passenger fares between St. Louis and the Illinois points have been since December 1, 1914, following the Five Per Cent case, generally on a basis of 2½ cents per mile for the distance within Illinois plus a charge of 25 cents for crossing the bridge over the Missouri river at East St. Louis of 35 cents at Granite City. The fares between East St. Louis or Chicago and the same points, on the other hand, are on a basis of 2 cents a mile, which is the maximum prescribed by the legislature of Illinois by act of July 1, 1907. Previous to December 1, 1914, the fares between St. Louis and Illinois points were upon almost the same basis as those from East St. Louis.

The carriers admitted that unlawful discrimination exists, but insisted that the commission is the only body that can authoritatively pass thereon; that they were not responsible for creating it; that they had made repeated and unsuccessful appeals to the legislature, the governor and the people of Illinois to raise the 2 cents a mile maximum passenger fare. They further insisted that their present interstate passenger fares are reasonable and that the discrimination should be removed by an increase in the intrastate fares.

The commission holds that the passenger fares for travel between St. Louis and points in Illinois are reasonable maximum fares where they are not in excess of 2.4 cents per mile, plus the tolls over the Mississippi river bridges. It finds, nevertheless, that the rates from St. Louis are discriminatory and that the maintenance between East St. Louis, Madison, Ill., and Granite City, Ill., and Illinois points by intrastate routes of fares lower than those maintained between St. Louis and the same Illinois points via the same routes by more than the present bridge tolls, gives unreasonable preference to the three Illinois points and subjects St. Louis to undue disadvantage; whereby there is an unreasonable burden on interstate traffic.

Similar findings are made as to the rates between Keokuk, Iowa, and points in Illinois.

It further finds that passenger fares between St. Louis and Keokuk and points in Illinois are discriminatory as against St. Louis and Keokuk and preferential in favor of Chicago to the extent that the fares between St. Louis and Keokuk and the Illinois points exceed the fares between Chicago and those same Illinois points, where the distances are approximately equal, by more than a reasonable bridge toll.

The commission also holds that intrastate fares on the reasonably direct lines intermediate to Chicago, Ill., at the north and St. Louis, Mo., and Keokuk, Iowa, on the south and southwest impose an unlawful burden on interstate commerce in case the basis of such fares per mile is less than the basis per mile for fares for interstate passenger travel between Keokuk, Iowa, and St. Louis, Mo., and Illinois points situate in the general territory first described and reached by reasonably direct routes of defendants herein, bride tolls excepted. (41 I. C. C., 13.)

STATE COMMISSIONS

The New York State Public Service Commission, Second District, has denied the petition of the New York Central for a rehearing on its application for authority to increase passenger fares, recently denied. The commission calls attention to the fact that, in its order, it did not hold reasonable all of the existing fares which the company proposed to change, and that another application, less sweeping, would be entertained.

COURT NEWS

The Union Pacific has filed suit in the United States court at Des Moines, Iowa, asking that the Chicago, Rock Island & Pacific be enjoined from using the Union Pacific tracks from Kansas City, Mo., to Topeka, Kan. The Rock Island acquired this trackage right by the purchase of the old Chicago, Kansas & Nebraska line, which had made an agreement with the Union Pacific for the use of the tracks, providing, according to the Union Pacific's allegation, that passengers should not be taken on between those points. It is stated that now the Rock Island is building a station at Kansas City, Kan., with the intention of handling freight traffic at that point.

Duty Towards Trespassing Live Stock

The Wyoming Supreme Court holds that, while trainmen are held to ordinary care to avoid killing stock, their duty does not arise with reference to trespassing livestock until the perilous condition of the latter is discovered, when they are under the duty merely to avoid unnecessary injury to the stock.—Burlington v. Cash (Wyo.), 157 Pac., 701.

Damages for Delay in Transportation

The Texas Court of Civil Appeals holds that, under the statute requiring a carrier to transport freight destined to or over any connecting railroad under regulations prescribed by the Railroad Commission, and making carriers failing to comply therewith liable for "damages sustained" and a penalty, the commission has no power to prescribe the damages recoverable.—Quanah, Acme & Pacific (Tex.) 184 S. W., 232.

Liability for Flooding

In an action for damages for flooding the plaintiff's property on account of the raising of a railroad embankment, the Arkansas Supreme Court holds that if the gutters, as they existed at the time the embankment was raised, were sufficient to take care of the water, the railroad would not be rendered liable by the fact that they were subsequently allowed to fill up so as to incapacitate them from doing so. There was no duty by the railroad to clean out the gutter in front of the plaintiff's property.—L., N. O. & Tex. (Ark.) 184 S. W., 450.

Land Grant for Limited Term—Compensation

A railroad may accept a conveyance of land on any condition that may lawfully be annexed to an ordinary grant; and when land was granted to the San Francisco & San Jose for a right of way for the term of its incorporation (50 years), and its successor elected to continue its use after the expiration of that time, the California District Court of Appeals, First district, holds that the owner of the estate in reversion was entitled to compensation at that time.—East San Mateo Land Co. v. Southern Pac. (Cal.), 157 Pac., 634.

Relief from Overflow

In injunction proceedings to compel a railroad to abate obstruction of a public drainage ditch by substituting an open span for piles therein, the record did not conclusively show that the railroad could not keep débris from catching on the piles and obstructing the ditch; and the cost of an open span would be $15,000. The Kentucky Court of Appeals directed the court below to retain control of the case until it could be determined whether obstructions could not be prevented by the railroad by other means.—L. & N. v. Franklin (Ky.), 186 S. W., 643.

Injuries on Freight and Mixed Trains

The Springfield Court of Appeals, Missouri, holds that the rule of res ipsa loquitur applies to injuries received by passengers from sudden jerking of freight or mixed trains only when the facts disclose such an extraordinary jerk or jar as would not happen if those in charge had exercised high care, and these facts must be alleged and proved. Travelers on such trains assume the risk of injury from sudden or more or less violent stops, jolts and jars usual in their operation.—Provance v. Missouri Southern (Mo.), 186 S. W., 955.

Overheating Stock in Pen

In an action for damages for hogs condemned by the government inspector, the Springfield Court of Appeals, Missouri, holds that evidence that the hogs were overheated in the railroad's pen before being loaded and shipped, which failed to connect the overheating with the condemnation, was insufficient to sustain a verdict for the plaintiff. There was but one stock train a day, at 8 a. m. It was held that whether the plaintiff's putting the hogs in the pen on the morning of the 18th, with the intention not to ship them until the morning of the 19th, was an unreasonably early time before shipment, relieving the carrier of the relationship of insurer or carrier of freight, was for the jury under the evidence, the temperature ranging between 65 and 70 degrees Fahrenheit.—McSpadden v. Lusk (Mo.), 186 S. W., 731.

Crossing Accident—Licensees

In an action for death from being struck by a fast moving backing engine at a footpath, which was not a public crossing, the Mississippi Supreme Court holds that where pedestrians continued to use a street, though it was discontinued and not used by vehicles, a plank having been placed to facilitate crossing the tracks, the railroad was charged with knowledge of the use of the crossing, and though one using it might only be a licensee, the company owed him the same duty it owes one crossing at a public crossing; and warnings of the approach of trains should be given, though the company was under no statutory duty to do so. At the same time persons crossing the tracks at such a place are bound to look out for trains. It was held that the questions of negligence of the railroad and contributory negligence of the deceased were for the jury. Any contributory negligence of the deceased would, it was held, only diminish the amount of the verdict. The action, by the deceased's widow, was for $25,000, and the jury gave a verdict for $5,000. The amount of the verdict led the court to believe the jury took into consideration the contributory negligence of the deceased, and the judgment was affirmed.—Illinois Central v. Dillon (Miss.), 71 So., 809.

Shipper Presumed Aware of Limitation of Liability

The New Mexico Supreme Court holds that it is not necessary that a bill of lading should bear on its face any freight rate so as to give the shipper notice of a limitation of liability. A shipper is conclusively presumed to know the shipping rate according to the printed and posted tariffs filed with the Interstate Commerce Commission. It is beyond the power of the carrier or the shipper to contract for a different rate, and the rate automatically attaches to each and every shipment. The court quoted Kansas City Southern v. Carl, 227 U. S., 639, as follows: "The valuation the shipper declares determines the legal rate where there are two rates based upon valuation. He must take notice of the rate applicable, and actual want of knowledge is no excuse. The rate, when made out and filed, is notice, and its effect is not lost, although it is not actually posted in the station."—Enderstein v. Atchison, T. & S. F. (N. Mex.), 157 N. W., 670.

Limitation of Liability—Partial Invalidity of Contract

A contract for the interstate transportation of livestock written on the customary printed form contained a provision that no action should be maintained to recover damages unless commenced within six months. It contained, also, a number of provisions by which the carrier sought to limit its liability for loss occasioned by its own negligence which are against public policy and unenforceable. In an action for damages re-

sulting from delay in transportation, the Kansas Supreme Court holds that the contract is not void in toto on the ground that it violates section 20 of the Commerce Act; that the contract should be regarded as divisible in view of its general use by interstate carriers with the approval of the Interstate Commerce Commission, and therefore the plaintiff's failure to commence his action within six months after the loss or injury occurred bars his right to recover.—Miller v. Atchison, T. & S. F. (Kan.) 156 Pac., 780.

Accident on Private Siding

In an action against a railroad for the death of a car trimmer in the employ of a mine, while a car was being placed beneath a tipple at the mine's private track, it appeared that it was the trimmer's duty to be on and about the cars when the railroad's crew approached, but it was not shown that he was required to be on the car while the railroad was engaged in placing cars in proper position under the tipple. It also appeared that he had no duty in connection with the cars which were being removed; and had been ordered to get off the car, and had got off. The Kentucky Court of Appeals held that the train crew had the right to presume that he would stay off, and were not required to anticipate that he would go to the other end of the car, to the brake; or to be on the outlook to see if he did get on the car; and the railroad was not liable for his death by being thrown down from the car when the other cars were pushed against it.—Gibson's Admr. v. L. & N. (Ky.), 186 S. W., 172.

Limited Liability for Acts of Sleeping Car Employees

The employees of a Pullman car are deemed agents of the railroad company only as between the railroad and its passengers, as these employees have no control over the management of the train; and this agency does not exist with respect to trespassers. Two men, wishing to go from Louisville to Nashville, without paying the regular fare, paid a dollar to an employee in the yards at Nashville to "square them through." On his advice, they got on the tender, and thence to the top of a coach, where they rode until the train entered Nashville. When near the station they climbed down from the roof of the rear coach, a Pullman sleeper, to its rear platform. Here they encountered the conductor of the car, who, by threatening to strike them with his lantern, compelled them to jump off while the train was passing over a high trestle. One of them was fatally injured. In an action against the railroad for his death there was nothing to show that he was about to annoy Pullman passengers, or even to enter the car, and the act of the conductor was a purely personal matter of his own. The Supreme Court of Tennessee held that the railroad company was not responsible for the act of the Pullman car conductor, for he was not its agent or servant.—L. & N. v. Marlin (Tenn.), 186 S. W., 595.

Passengers on Freight Trains—Kansas Statute

The Kansas Supreme Court holds that it is within the power of the Legislature to require railroads to carry passengers on freight trains, and to fix the measure of their responsibility for injuries suffered by passengers choosing that mode of travel; and under the provision of the Kansas statute of 1909, providing that on such trains the railroad companies shall only be liable for their gross negligence, one who takes passage on a freight train has no right to expect greater precautions for his safety than slight care, the recognized meaning of "gross negligence" being the failure to exercise slight care. In an action for personal injuries sustained while attempting to board a local freight train, it appeared that the plaintiff could not get a ticket from the agent, who was busy unloading freight until the train started. The brakeman told him to get on, as they were leaving; and the train was moving slowly. He attempted to swing on to the way car as it passed, just after the conductor and brakeman had done so and he claimed the train jerked and he was thrown down and injured. The trial court ignored the statute and instructed the jury on the old theory that the railroad would be liable if it had been guilty of ordinary negligence towards the plaintiff; and the jury gave a verdict for the plaintiff. On appeal, this was held to be erroneous, and the cause was remanded for a new trial.—Jones v. Atchison, T. & S. F. (Kan.), 157 Pac., 399.

Railway Officers

Executive, Financial, Legal and Accounting

K. E. Hamlin has been appointed freight claim agent of the Western Maryland, with headquarters at Baltimore, Md.

R. E. Kimbell, assistant to the president of the St. Louis Southwestern, has been appointed assistant to the first vice-president, with headquarters at St. Louis, Mo., effective August 1.

A. D. Gray, cashier of the Atchison, Topeka & Santa Fe, has been promoted to office assistant to the treasurer to take the place of A. O. Wellman, deceased, with headquarters at Topeka, Kans. H. B. Fink, assistant paymaster, has been promoted to cashier with office also at Topeka.

George W. Oliver, assistant statistician of the Atchison, Topeka & Santa Fe, has been promoted to statistician, with headquarters at Chicago, Ill., to succeed James Peabody, deceased. The department of statistics will become a part of the accounting department, and the statistician will report directly to the general auditor, effective August 1.

James M. Herbert, whose election as first-vice-president of the St. Louis Southwestern has been noted, was born on January 15, 1863, at Delmont, Pa. He was educated in public and high schools of Westmoreland county, Pa. He first entered railway service in 1880, as night telegraph operator of the Wabash, St. Louis & Pacific. Since that time, he has been consecutively station agent, yard clerk, train despatcher, chief train despatcher and trainmaster of the same road; trainmaster of the eastern division of the Grand Trunk, at Island Point, Vt.; trainmaster of the same road at Belleville, Ont.; superintendent of the eastern division of the same road at Montreal; superintendent of the Kansas and Colorado divisions of the Missouri Pacific at Osawatomie, Kan.; general superintendent of the St. Louis, Iron Mountain & Southern; manager of the Pacific system of the Southern Pacific; general manager of the Denver & Rio Grande and the Rio Grande Western; vice-president and general manager of the Colorado & Southern and first vice-president of the same road, and president of the Colorado, Wyoming & Eastern. As first vice-president of the St. Louis Southwestern, he will have headquarters at St. Louis, Mo.

Operating

W. B. Brown has been appointed car service agent of the Canadian Pacific, Atlantic division, with office at St. John, N. B., succeeding E. J. Worth, transferred.

A. A. Zion, superintendent of the Indianapolis Union Railway, who was granted a leave of absence several months ago, has retired on a pension. P. J. Landers, acting superintendent and engineer maintenance of way, has been appointed superintendent, vice Mr. Zion, effective August 1.

C. E. McLaughlin has been appointed superintendent of the Minot division of the Great Northern, with headquarters at Minot, N. D., vice F. D. Kelsey, promoted. R. A. McCandless, division superintendent at Great Falls, Mont., has been transferred to the Dakota division, with headquarters at Grand Forks, N. D., vice C. E. McLaughlin, transferred, effective August 1.

C. A. Vermillion, superintendent of car service and telegraph of the Spokane, Portland & Seattle, Oregon Electric, Oregon Trunk, United Railways, Spokane & Inland Empire, and Pacific and Eastern, has been promoted to superintendent of the Spokane, Portland & Seattle, Oregon Electric, Oregon Trunk and United Railways, with headquarters at Portland, Ore., vice G. E. Votaw, resigned. H. M. Huston has been appointed superintendent of car service and telegraph in place of Mr. Vermillion, promoted, effective August 1.

F. J. Byington has been appointed superintendent of the Peninsula division of the Chicago & North Western, with headquarters at Escanaba, Mich., vice C. E. Andrews, deceased. J. W. Layden has been appointed superintendent of the West Iowa division, at Boone, Iowa, vice Mr. Byington, promoted. A. J. Worthman has been made assistant superintendent of the Madison division,

with office at Baraboo, Wis., vice Mr. Layden. R. J. Hall, chief train despatcher, at Belle Plaine, Iowa, has been appointed trainmaster at Adams, Wis., in place of A. J. Worthman, promoted.

Traffic

Thomas L. Beckwith has been appointed general agent of the Seaboard Air Line at Havana, Cuba, effective July 25.

Orno M. Brown has been appointed general agent of the El Paso & Southwestern System and the Morenci Southern, with headquarters at Cleveland, Ohio.

Warren K. Cundiff, assistant general passenger agent of the Union Pacific at Kansas City, Mo., has been transferred to Denver, Colo., vice R. S. Ruble, deceased.

C. N. Gray, commercial agent of the Gulf Coast Lines with office at Shreveport, La., has been transferred to Oklahoma City, Oklahoma., the Shreveport agency having been abolished.

James P. Dervin has been appointed chief of the tariff bureau of the New York Central, lines east of Buffalo, with headquarters at New York, to succeed N. D. Chapin, resigned to engage in other business.

John C. Haile, whose appointment as passenger traffic manager of the Central of Georgia, with headquarters at Savannah, Ga., has already been announced in these columns, was born at Camden, S. C., and began railroad work in 1875 as a clerk in the general freight office of Richmond & Danville. He remained in that position until November, 1879, when he became chief clerk to the assistant general freight and passenger agent at Columbia, S. C. From October, 1886, to December, 1889, he was agent of the same road at Columbus, Ga., and then to July, 1892, was local and soliciting agent of the Central Railroad of Georgia at Columbus. In July, 1892, he was appointed general passenger agent of the same road, now the Central of Georgia, which position he held at the time of his recent appointment as passenger traffic manager of that road, with headquarters at Savannah, Ga., as above noted.

J. C. Haile

K. A. Moore, commercial agent of the Cleveland, Cincinnati, Chicago & St. Louis at Kansas City, Mo., has been appointed commercial agent of the New York Central Fast Freight Lines, with headquarters at Cincinnati, Ohio, effective August 1. This is a newly created position.

C. E. Veatch, assistant general freight agent of the Missouri & North Arkansas, has been promoted to assistant general freight and passenger agent, with office at Harrison, Ark. M. L. Schultz has been appointed commercial agent, with headquarters at Chicago, Ill. W. L. Monson has been appointed commercial agent, with office at Little Rock, Ark. W. J. McMahon has been appointed commercial agent, with headquarters at New Orleans, La. L. C. Williams has been made commercial agent, with office at Wichita, Kan., effective August 1.

J. O. Goodsell, city passenger agent of the Union Pacific System, at Chicago, Ill., has been promoted to assistant general passenger agent of the Union Pacific, with headquarters at Kansas City, Mo., vice W. K. Cundiff, transferred. Mr. Goodsell is 43 years old, and started his railroad career with the Union Pacific on October 8, 1890. He first entered the passenger department on July 10, 1895, and has remained in that department ever since. During his career he has been stationed successively at Omaha, Neb.; Salt Lake City, Utah; St. Paul, Minn.; Toronto, Can.; Detroit, Mich., and Chicago.

N. R. Markle, commercial agent of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Milwaukee, Wis., has been transferred to Kansas City, Mo., succeeding K. A. Moore, resigned. W. W. Baum has been appointed commercial agent at Milwaukee, succeeding N. R. Markle. T. F. Murphy has been appointed commercial agent, with headquarters at Chicago, Ill. A. C. Braun has been appointed commercial agent, with office at Dayton, Ohio. J. H. Stevenson has been appointed commercial agent, with headquarters at Cairo, Ill., vice L. H. Mussman, transferred, effective August 1.

R. L. Simpson, general freight agent of the Southern Railway at Birmingham, Ala., has been transferred to Atlanta, Ga.; J. W. Hunter, assistant general freight agent at Mobile, Ala., has been appointed general freight agent, with office at Birmingham, Ala., vice Mr. Simpson; J. H. Andrews, division freight agent at Raleigh, N. C., has been appointed assistant general freight agent, with office at Mobile, vice Mr. Hunter; Thomas B. Dixon, commercial agent at Columbus, Ga., has been appointed division freight agent, with office at Columbus, and A. E. Dicks, freight soliciting agent at Raleigh, has been appointed commercial agent at Raleigh.

John T. Hendricks, whose appointment as traffic manager of the Western Pacific has been announced, was born at Shelbyville, Ind., on September 20, 1867, and entered railway service in April, 1886, with the Cincinnati, Hamilton & Dayton. From 1889 to November, 1905, he was, consecutively, traveling freight agent of the Atchison, Topeka & Santa Fe, at Cincinnati, Ohio; general agent of the International & Great Northern; general agent of the same road, the St. Louis, Iron Mountain & Southern and the Texas & Pacific in Texas, and general agent of the Union Pacific at Philadelphia, Pa. He was assistant general freight agent of the Western Maryland at Baltimore, Md., from November, 1905, to January 15, 1906, when he was appointed freight traffic manager. On November 1, 1912, he was made vice-president in charge of traffic of the same road, and on January 1, 1913, left the Western Maryland to become general traffic manager of the Missouri Pacific-St. Louis, Iron Mountain & Southern. In March, 1914, he went to San Francisco to become freight traffic manager of the Western Pacific. His appointment as traffic manager of that road, with headquarters at San Francisco, was effective on August 1.

J. T. Hendricks.

C. E. Hilsabeck has been appointed assistant general freight agent of the El Paso & Southwestern System and the Morenci Southern, with headquarters at El Paso, Tex., effective August 1. Mr. Hilsabeck was born in Woodford county, Ill., on July 5, 1877, and was educated in the public schools of Fairbury, Ill. He first entered railroad service on January 1, 1905, as a clerk in the general freight office of the Chicago, Rock Island & Pacific at Chicago. In December, 1909, he entered the employ of the El Paso & Southwestern as a rate clerk in the general traffic department at Chicago. He was promoted to chief clerk to the assistant general traffic manager at Chicago on January 1, 1914.

Engineering and Rolling Stock

W. R. Elmore has been appointed acting master mechanic of the Nevada Northern, with headquarters at East Ely, Nevada, effective August 1, vice H. Selfridge, resigned.

M. J. McCarthy, superintendent of motive power of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton, at Cincinnati, Ohio, has had his jurisdiction extended over the western lines of the Baltimore & Ohio. A. K. Galloway, master mechanic of the Baltimore & Ohio, at Baltimore, Md.,

has been appointed general master mechanic of the northwest district and the Cincinnati, Hamilton & Dayton. P. H. Reeves, master mechanic of the Baltimore & Ohio Southwestern, at Chillicothe, Ohio, has been appointed general master mechanic of the southwest district. H. E. Greenwood, master mechanic, at Seymour, Ind., succeeds Mr. Reeves, and J. E. Quigley, master mechanic, at Flora, Ill., succeeds Mr. Greenwood. W. F. Harris, general foreman, at Storrs, Ohio, succeeds Mr. Quigley.

A. E. Dales, district master mechanic of the Canadian Pacific, with headquarters at Brandon, Man., has been transferred to the Fourth district, with headquarters at Edmonton, Alta., replacing A. West, transferred to Brandon.

E. J. Correll, division engineer of the Ohio division of the Baltimore & Ohio Southwestern, at Chillicothe, Ohio, has been promoted to district engineer maintenance of way of the southwest district, with headquarters at Cincinnati. C. H. R. Howe, division engineer of the Illinois divison, at Flora, Ill., has been transferred to a similar position on the Ohio division, with headquarters at Chillicothe. C. E. Herth has been advanced from assistant division engineer of the Indiana division, at Seymour, Ind., to division engineer of the Illinois division, at Flora, Ill. R. S. Welch, assistant engineer, at Cincinnati, has been transferred to the Indiana division, at Seymour, as assistant division engineer. R. W. Gabriel, assistant division engineer of the Ohio division, at Chillicothe, has been promoted to assistant engineer in the office of the district engineer maintenance of way, for the southwest district, with headquarters at Cincinnati. W. P. Abbott, assistant supervisor, Ohio division, with headquarters at Leesburg Ohio, has been advanced to assistant division engineer of the Ohio division, located at Chillicothe.

OBITUARY

A. B. Stickney, formerly president and receiver of the Chicago Great Western, died at his home in St. Paul, August 9, following a long illness. He was 76 years of age.

Edward Kent, member of the firm of Chalmers, Kent & Stahl, solicitors for the Santa Fe, Prescott & Phoenix lines of the Atchison, Topeka & Santa Fe, with headquarters at Phoenix, Ariz., died at Chicago on July 30 from a hemorrhage caused by the heat.

Robert S. Towne, president and treasurer of the Mexican Northern and the Potosi & Rio Verde, with office at New York, died on August 3 in that city at the age of 58. Mr. Towne was at the head of several corporations with large interests in Mexico, and was a director in many development enterprises.

Richard L. Preis, general storekeeper of the Texas and Louisiana lines of the Southern Pacific, died at Houston, Tex., on August 1, after an illness of a few hours. Mr. Preis was born at New Orleans, La., on January 29, 1855, and was educated in the grammar and high schools of that city. He first entered railway service on August 9, 1870, in the stores department of Morgan's Louisiana & Texas. From November, 1883, to May, 1907, he was storekeeper at New Orleans of the same road. In May, 1907, he was appointed general storekeeper of the Sunset Central Lines, with headquarters at Houston, Tex. He held this position up to the time of his death.

Harry A. Fabian, formerly from March, 1910, to November, 1915, manager of purchases and supplies of the New York, New Haven & Hartford at Boston, died on August 2 in New York City. He was born on October 16, 1876, at Montreal, Quebec, and began railway work on the Canadian Pacific in July, 1889. He served on that road as a clerk in the dining car department, passenger department and president's office until April, 1893, and then for a year was with the Canadian passenger agent of the Chicago, Rock Island & Pacific at Montreal. Then he was with the Northern Pacific for ten years, rising to the position of clerk to the president. In April, 1904, he entered the service of the New York, New Haven & Hartford as secretary to the president, and in December, 1906, was appointed assistant to president. He remained in that position until March, 1910, when he was appointed manager of purchases and supplies of the same road, and also of the Boston & Maine and the Maine Central.

Equipment and Supplies

LOCOMOTIVES

THE BINGHAM & GARFIELD will purchase a Mallet type locomotive.

THE CANTON RAILROAD will soon purchase 2 switching locomotives.

THE GULF & SHIP ISLAND is in the market for a number of locomotives.

THE INTERSTATE RAILWAY is inquiring for a number of passenger locomotives.

THE TOLEDO-DETROIT is in the market for a number of Consolidation locomotives.

THE DULUTH, SOUTH SHORE & ATLANTIC is inquiring for prices on 1 Pacific and 2 Consolidation locomotives.

THE MICHIGAN CENTRAL is reported to have ordered 5 Pacific type locomotives from the American Locomotive Company.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered 5 Pacific type locomotives from the American Locomotive Company.

THE RUSSIAN GOVERNMENT has ordered 9 Mogul locomotives from the American Locomotive Company. These locomotives will have 11 by 16-in. cylinders, 33½-in. driving wheels and a total weight in working order of 37,000 lb.

FREIGHT CARS

THE BINGHAM & GARFIELD is inquiring for 25 concentrate cars.

THE LEHIGH VALLEY has withdrawn its inquiry for 1,500 box car bodies.

THE NEW YORK CENTRAL has issued inquiries for 1,000 box and 1,000 automobile cars.

THE DELAWARE & HUDSON has ordered 2 heavy platform cars from the Pressed Steel Car Company.

THE CHESAPEAKE & OHIO has given the Western Steel Car & Foundry Company an order to repair 250 box cars.

THE LUTCHER & MOORE LUMBER COMPANY, Orange, Tex., has ordered 50 logging cars from the American Car & Foundry Company.

THE COLUMBIA CHEMICAL COMPANY, Barberton, Ohio, has ordered 3 40-ton dump cars from the American Car & Foundry Company.

THE DIAMOND GASOLINE COMPANY, Kansas City, has ordered 10 10,000-gal. capacity tank cars form the American Car & Foundry Company.

THE SAPULPA REFINING COMPANY, Sapulpa, Okla., has ordered 160 8,000-gal. capacity tank cars and 40 10,000-gal. capacity tank cars from the General American Tank Car Corporation.

PASSENGER CARS

THE NEW YORK, NEW HAVEN & HARTFORD has ordered 4 all-steel dining cars from the Pullman Company.

THE PHILADELPHIA & READING is preparing specifications for a number of passenger cars for suburban service.

THE CUBA COMPANY has ordered 2 combination mail and express cars and 4 second-class coaches from the American Car & Foundry Company.

THE MISSISSIPPI RIVER & BONNE TERRE, reported in the *Railway Age Gazette* of July 21 as being in the market for passenger cars, has ordered 2 coaches and one baggage and mail car from the American Car & Foundry Company.

IRON AND STEEL

THE BALTIMORE & OHIO has ordered 300 tons of bridge work from the American Bridge Company.

THE CANADIAN NORTHERN has ordered 15,000 tons of rails from the United States Steel Corporation.

THE SEABOARD AIR LINE has ordered 2 bridges, 800 tons, from the American Bridge Company to repair flood damage.

THE SOUTHERN RAILWAY has ordered 8 bridges, 700 tons, from the Virginia Bridge & Iron Company for flood repair work.

THE NEW YORK CENTRAL has ordered 700 tons of steel from the American Bridge Company for a bridge in Youngstown, Ohio.

THE CINCINNATI, HAMILTON & DAYTON has ordered 300 tons of bridge work from the American Bridge Company for bridges in Ohio.

THE DENVER & RIO GRANDE has ordered 288 tons of bridge steel from the American Bridge Company for bridges in Colorado and Utah.

THE ST. LOUIS SOUTHWESTERN has ordered 267 tons of bridge steel from the American Bridge Company for 2 single track pony truss spans.

MISCELLANEOUS

THE NEW YORK CENTRAL has given an order to the Roberts & Schaefer Company, of Chicago, for the building of an automatic electric fireproof coaling plant at Adrian, Mich.

THE CANADIAN NORTHERN has awarded a contract to the Roberts & Schaefer Company, of Chicago for the rebuilding of a frame constructed automatic coaling plant at Rideau Junction, Ont., recently destroyed by fire.

THE ILLINOIS CENTRAL has awarded a contract to the Bedford-Nugent Company, North Evansville, Ind., for paving driveways and the Main street team yards adjacent to its tracks at Evansville, at a cost of about $9,000.

THE ILLINOIS CENTRAL has awarded a contract to A. Kilander & Co., Chicago, Ill., for the installation of a hot blast heating system in the extension to its machine shop at Waterloo, Iowa. The work will cost about $5,000.

THE OREGON SHORT LINE has awarded contracts to the Roberts & Schaefer Company, of Chicago, for a large three-track reinforced concrete automatic electric counter-balanced bucket coaling plant with sanding facilities, at Shoshone, Idaho.

RAILWAYS AND THE WOUNDED.—If the railway history of the present European war is ever written in adequate form, attention will certainly be paid to one aspect which is generally overlooked, even by those writers who realize the essential importance of railways in modern warfare. That is the extent to which the control of a railway system leads to the conservation of the man-power of an army. It is a truism that only a relatively small proportion of the deaths of soldiers in any campaign have taken place in battle. Disease and inability to attend speedily and promptly to wounds have claimed a far greater number. Thanks to the railway the percentage of wounded men who recover, and who can be sent back to the firing line again is continually on the increase. A sufficient and well-organized system of hospital trains, operating from suitable bases, nowadays enables the worst cases to be brought in a few hours from the field to the hospital best suited to the circumstances of the case, and in this way prompt medical attention or surgery has saved and is saving thousands of lives which would have been lost in an earlier period. Much suffering and death is also avoided by the fact that a modern Red Cross train provides one of the most perfect methods of transporting wounded that have as yet been devised. And not only does the railway thus conserve the fighting strength of an army, but it also enables a wounded man to return to the firing line in quicker time. It is pleasing to reflect that in addition to its role as a weapon of offense, the railway also serves as an instrument for the reduction of death and suffering.—*Railway Gazette, London.*

Supply Trade News

J. L. Terry has become associated with the sales department of the Q & C Company, New York. Mr. Terry has been in railway supply work but a comparatively short time. He was formerly on the Denver & Rio Grande. He was later appointed purchasing agent of the Denver, Laramie & Northwestern and subsequently served as superintendent and general manager.

The Pyle-National Company, Chicago, has begun the erection of a new manufacturing plant in the northwestern part of Chicago, adjacent to the tracks of the Chicago & North Western. The plant will cover six acres. The general offices of the company will be at the plant, but it will also maintain an office downtown. The new plant will be equipped with the most modern machinery to make all the company's products, including the Young locomotive valve, the Young valve gear, the Young reverse gear, also its various types of electric headlights. The plant and the ground occupied will cost nearly $500,000.

The Acme Supply Company, Chicago, announces the opening of its own offices in eastern and southeastern territory, effective August 15. William M. Wampler has been appointed eastern sales manager, and Franklin M. Nicholl, eastern and Canadian sales representative, with headquarters at 50 Church street, New York City. F. N. Grigg has been appointed southeastern sales manager, with headquarters in the Virginia Railway & Power building, Richmond, Va. E. S. Sullivan has been appointed sales representative, with headquarters at the Monadnock building, San Francisco, Cal.; W. F. McKenney, sales representative, with headquarters at 54 First street, Portland, Ore., and Bell & Jamison, sales representatives, with headquarters in the Hellman building, Los Angeles, Cal.

TRADE PUBLICATIONS

AIR COMPRESSORS.—Bulletin 34-N recently issued by the Chicago Pneumatic Tool Company deals with the company's steam and power driven single compressors.

GREAT NORTHERN AND CHICAGO, BURLINGTON & QUINCY.—These companies have issued a 26-page, illustrated booklet describing the scenery of the Glacier National Park, and giving the cost of making a tour through it.

LOCOMOTIVES.—Record No. 83 recently issued by the Baldwin Locomotive Works deals with Mikado type locomotives. The booklet in its 32 pages discusses the advantages of Mikado locomotives and illustrates and describes 27 locomotives of this type, representing a wide range in weight and capacity.

COLORADO & SOUTHERN AND CHICAGO, BURLINGTON & QUINCY.—These companies have issued a 24-page illustrated booklet describing the scenic attractions of Rocky Mountain National Park and Estes Park in Colorado, and containing the usual information concerning rates and accommodations to travelers.

CAROLINA, CLINCHFIELD & OHIO.—This company has issued a 32-page booklet describing the attractions of the Blue Ridge and Cumberland mountains. The pamphlet is well illustrated with photographs and contains detailed information with reference to rates and accommodations to vacation seekers.

STORAGE BATTERIES.—One of the latest publications of the Electric Storage Battery Company, Philadelphia, bulletin No. 159, deals with the Ironclad-Exide battery for storage battery, mine and industrial locomotives. The booklet describes the batteries themselves and contains a score of views of storage battery locomotives.

PASSENGER CAR COUPLERS.—The McConway & Torley Company, Pittsburgh, Pa., has recently issued a booklet dealing with its Pitt pivoted passenger coupler. The booklet describes the coupler, particular attention being given to its great flexibility in curving, and contains views of 45 passenger cars of various types, for 16 different roads, on which the Pitt coupler was specified.

LOCOMOTIVE STOKERS.—The Locomotive Stoker Company has recently issued catalogue 14-C, dealing with Street locomotive stoker applications. The book in its 60 pages shows the different types of locomotives to which these stokers have been applied, there being given photographs and specifications of 28 locomotives of different types built for 15 railroads. This is the fourth revision of this catalogue and brings it up to date.

WOOD CONSTRUCTION AND FIRE LOSSES.—The National Lumber Manufacturers' Association, Chicago, has issued a 15-page booklet pointing out some of the errors in the commonly accepted ideas regarding the large fire losses resulting from timber construction and presenting a large amount of data regarding actual accurate comparisons. This book contains a large amount of information of value to those interested in wood construction from the standpoint of the fire hazard.

PYROMETERS.—The Gibb Instrument Company, Pittsburgh, Pa., has issued a folder relative to the "I-Rite" for judging the temperature of metal undergoing treatment. The "I-Rite" is an instrument in appearance much like a pocket flash light. The person using it stands some distance from the furnace, and looks through it at the object the temperature of which is to be measured. A description of it appeared in the May, 1916, Railway Mechanical Engineer, page 262.

GEAR BLANKS AND MISCELLANEOUS CIRCULAR SECTIONS.—The Carnegie Steel Company has recently issued a third edition of its booklet dealing with this subject. The booklet contains standard specifications, lists of dimensions, illustrations and drawings of forged and rolled gear blanks, industrial and mine car wheels, street and interurban railway wheels, pipe flanges and shaft couplings, automobile fly wheel blanks, crane track wheel blanks and piston blanks. The piston blanks for the manufacture of solid steel locomotive pistons are illustrated for the first time.

STEAM HAMMERS.—The National Hoisting Engine Company, Harrison, N. J., has issued a 20-page catalog describing the National steam pile hammer. The booklet contains tables giving the dimensions and other characteristics of the five sizes of these hammers and is illustrated with photographs showing the hammers in use on various kinds of construction work. A 12-page pamphlet has also been issued describing the steam hammers No. 6 and No. 7, weighing 650 and 150 lb. respectively, which are designed especially for use in driving wood and steel sheet piling.

CAMELOGUES.—Many of the readers of the *Daily Railway Age Gazette*, when they received their copies of the paper, turned first of all to read of the adventures of the Sheik Kahrdor and his ever faithful Camel Phixture, the railroad wonder. The Camel Company of Chicago has now reprinted the eight advertisements in the *Dailies* in booklet form. The eight pages are presumably the first attempt to adapt the Arabian Nights to railway supply advertising, but their success in drawing the reader's attention to the excellencies of the Camel car door fixture will not be questioned.

HEATING AND VENTILATING APPARATUS FOR PASSENGER CARS.—This is the title of a 144-page book, 9 by 12 in. in size, which has recently been issued by the Gold Car Heating & Lighting Company, New York. The book gives a complete description of the company's steam, vapor, hot water and electric systems for heating and automatically controlling the temperature of all types of railway cars, and also data concerning its ventilators. The apparatus which is included in the systems is illustrated and described in detail, and drawings are given, many of them in two or more colors, showing the application of each of the various systems.

CAR CURTAINS AND CURTAIN FIXTURES.—The Acme Supply Company, Chicago, has issued Bulletin F-6, in which is introduced its new Acme Enclosed Groove F. P. Curtain Fixture No. 100. The interesting point in this fixture is the fact that it cannot be removed from its groove by the passengers. No pinch handles are required, and it can be operated from any point along the bottom of the curtain. Descriptions of the Crown and Gem curtain fixtures for use with open grooves, the Acme friction roller, and the special metal car curtain roller, are also contained in this bulletin as well as curtain fixtures for electric cars and interurban coaches.

Railway Construction

BALTIMORE & OHIO.—This company has awarded a contract to the Bates & Rogers Construction Company, Chicago, Ill., for grading, tunneling and masonry work on the Long Fork Railroad in northeastern Kentucky, to be built from a junction with the Chesapeake & Ohio at the forks of Beaver creek, in Floyd county, south up the left fork of Beaver creek to Weeksbury, Knott county, 26 miles. The work involves 450,000 yd. of excavation and embankment, the construction of five tunnels, from 140 ft. to 775 ft. in length, and 10,000 yd. of masonry work in connection with bridges and culverts. The maximum curvature is 10 deg. and the maximum grade with the traffic 1.9 per cent. The estimated cost of the work is $500,000. (June 30, page 1609.)

CENTRAL FLORIDA INTERURBAN.—Work will be started about September 1, on the first division of this projected electric line. The plans call for building from Melbourne, Fla., west via St. Cloud, to Kissimmee, thence north via Orlando to Sanford, about 100 miles. The company expects to develop a traffic in fruits, produce, lumber and naval stores. W. Hall, secretary, and Wylie & Reynolds, engineers, St. Cloud. (July 14, p. 89.)

CHATHAM TERMINAL COMPANY.—Application has been made by this company with $50,000 capital and office at Savannah, Ga., for a charter, it is said, to build a railroad about 3 miles long from a connection with the Central of Georgia to the property of the Savannah Warehouse & Compress Company. The promoters include officers of the Central of Georgia, also T. M. Cunningham, Jr.; J. R. Anderson, O. R. Teague and C. W. Small of Savannah.

GLENDALE & MONTROSE.—The Great Western Improvement Company, San Francisco, Cal., has acquired this road and will extend the line to Sunland, La Ganada and Littlelands, about eight miles, if free right of way and sufficient bonus are offered by the unserved district. W. J. Bohon, general manager, Glendale, Cal.

LONG FORK RAILROAD.—See Baltimore & Ohio.

NORTH CAROLINA ROADS.—The Whiteville Lumber Company, Whiteville, N. C., plans to carry out work to complete its line southeast to Reaves Ferry, it is said, and may extend the line 15 miles farther to Shallotte, in the southern part of Brunswick county. The company also has under consideration the question of building a line to connect with the Seaboard Air Line at a point about 12 miles north of Whiteville. Nathan O'Berry, president, Goldsboro, N. C.

PENNSYLVANIA RAILROAD.—Bids will be asked for in the near future by the Pennsylvania Railroad for the construction of a tunnel under the canal feeder and tracks at Sullivan Way and West State street, Trenton, N. J. The tunnel will be lined with reinforced concrete. The improvements are to be carried out to eliminate grade crossings.

RAILWAY STRUCTURES

ALTOONA, PA.—A contract has been let to Philip Stadler, Altoona, for the construction of a three story brick building, 40 ft. by 56 ft., at Eleventh street, Altoona, for the Altoona & Logan Valley Electric Railway. The cost, including the ground for the site, will be $35,000.

CANTON, OHIO.—The Wheeling & Lake Erie has commenced the construction of a three-story reinforced concrete and brick freight station, 42 ft. by 360 ft. The Turner Construction Company of Buffalo, N. Y., and Canton, Ohio, has the contract for the work. The building will cost approximately $90,000.

CHARLOTTE, N. C.—The Southern Railway will start work at once rebuilding its bridge over the Catawba river, near Charlotte, destroyed by the recent flood.

CEDAR RAPIDS, IA.—The Chicago, Milwaukee & St. Paul will make terminal improvements at Cedar Rapids costing approximately $70,000.

CENTER GROVE, JULIEN AND EPWORTH, IOWA.—The Illinois Central is co-operating with the state and county engineers in the construction of two viaducts, one at Center Grove and the other at Julien, and a subway under the main line at Epworth. The work at Center Grove and at Epworth is now being done by company forces. The cost of these improvements together is estimated at $25,000.

DERRY, PA.—The Pennsylvania Railroad will start work shortly on a 14-stall roundhouse at Derry, costing about $75,000. The structure will be of brick and wood, and will have a wood block floor, wood rolling doors and built up roofing. The work will be carried out by W. F. Trimble & Sons Company, Pittsburgh, Pa.

EDMONTON, ALTA.—The Canadian Northern commenced the construction of a machine shop and store building in its yards on July 24. The machine shop will be a one-story structure, 61 ft. by 118 ft., with brick walls and concrete foundation, and will cost about $20,000. The store building will be two stories in height, 86 ft. by 48 ft., with brick walls and concrete foundation. It will cost approximately $31,700. The E. M. Nesbitt Company, Edmonton, has the contract for the work. J. Schofield, architect, Winnipeg, Man.

ERIE, PA.—The New York Central, in connection with the Pennsylvania, has commenced this year the elimination of grade crossings at six of the principal streets in the city of Erie. The work will extend over a period of about five years, and in connection therewith a modern passenger station will be constructed.

INDIANAPOLIS, IND.—The Pittsburgh, Cincinnati, Chicago & St. Louis has awarded a contract to Dunn & McCarthy, Chicago, Ill., for the construction of a bridge over Arlington avenue. The bridge will consist of eight solid reinforced balustrades acting as continuous through girders, 37 ft. between the supports. About 80 tons of steel will be required and about 800 cu. yd. of concrete masonry.

JACKSONVILLE, FLA.—Condemnation proceedings to acquire land necessary for the site of the proposed new passenger station and tracks in Jacksonville have been started, it is said, in the Circuit Court by the Jacksonville Terminal Company, Florida. This is the first legal step taken to begin the construction of this $2,000,000 building, plans for which are now being completed by New York architects. Engineers are already on the ground planning the preliminary work, which will begin in about two months. (January 1, 1915, p. 40.)

KENSINGTON, ILL.—The Illinois Central has awarded a contract for the construction of a brick and concrete interlocking tower, 18 ft. by 33 ft., to the Drumm Construction Company, Chicago. The structure will cost about $6,000.

KINSTON, N. C.—The Atlantic Coast Line and the Norfolk Southern are entering into an agreement for the construction of a union station at Kinston, N. C. Plans are not yet completed. The Atlantic Coast Line will probably have charge of the erection of the station. (June 9, p. 1246.)

NEW HAVEN, CONN.—The New York, New Haven & Hartford will spend about $250,000 in improvements to freight and passenger terminals at New Haven. Definite plans are not yet made.

OCALA, FLA.—A contract has been given to A. M. Walkup Company, Inc., Richmond, Va., it is said, to build the new passenger station in Ocala. The station is to be used jointly by the Seaboard Air Line and the Atlantic Coast Line. (May 19, p. 1114.)

ST. LOUIS, MO.—The St. Louis & San Francisco has commenced the erection of a one-story brick and concrete roundhouse at Chouteau avenue. The building will cost about $25,000 and the contract was awarded to James Stewart & Co., St. Louis.

SAN FRANCISCO, CAL.—The Southern Pacific will build a 10-story steel-frame, brick and concrete office building, 275 ft. by 209 ft., on Market street, between Stewart and Spear streets. Over 2,000 115-ft. piles will be driven to furnish a foundation for the building. The eight top floors will be used for general office purposes by the Southern Pacific, and all of the first two floors, except space on the first floor for the district freight agent, will be rented to the public. The cost of the building is estimated at $1,750,000. Bliss & Fayville are the architects. (July 14, page 90.)

Railway Financial News

CHICAGO, BURLINGTON & QUINCY.—The Commercial & Financial Chronicle, in its issue of August 5, prints the following: "We learn officially that of the $13,696,000 4 per cent general mortgage bonds of 1908 approved by the Illinois Public Utilities Commission in July, $10,000,000 are for construction and $3,696,000 to refund prior bonds."

CHICAGO, ROCK ISLAND & PACIFIC.—William A. Read & Co., New York, have arranged for the extension of the Chicago, Rock Island & Pacific $7,500,000 collateral notes due August 16 to February 16, 1917, at 6 per cent.

CRIPPLE CREEK CENTRAL.—A quarterly dividend of 1½ per cent has been declared on the common stock, and a quarterly dividend of one per cent on the preferred stock. This is the regular dividend on the preferred, but increases the rate on the common from an annual 4 per cent to an annual 6 per cent. The 4 per cent rate has been paid on the common since 1913.

LEHIGH VALLEY.—See comments in the editorial columns on the annual report.

MINNESOTA TRANSFER RAILWAY.—A syndicate, including the Northwestern Trust Company of Minneapolis, is offering $2,105,000 first mortgage 5 per cent bonds of the Minnesota Transfer Railway at 102. Ownership of the stock of the company is divided equally between the Chicago, St. Paul, Minneapolis & Omaha; Chicago, Milwaukee & St. Paul; Great Northern; Northern Pacific; Minneapolis, St. Paul & Sault Ste. Marie; Chicago Great Western; Chicago, Rock Island & Pacific; Minneapolis & St. Louis, and Chicago, Burlington & Quincy. Each company pays an equal portion of the sinking fund and interest on the bonds. The sinking fund is half of one per cent of the total amount of bonds outstanding at any time, bonds purchased to be kept alive and accrued interest added thereto.

ST. LOUIS & SAN FRANCISCO.—The Old Colony Trust Company, Boston, will sell on August 23 the following collateral securing $2,250,000 5 per cent notes: $2,500,000 St. Louis & San Francisco common stock trust certificates, issued in respect of Chicago & Eastern Illinois common stock; $1,490,000 St. Louis & San Francisco-Kansas City, Ft. Scott & Memphis guaranteed 4 per cent preferred stock certificates; $100,000 St. Louis & San Francisco general lien 5 per cent bonds, due 1927.

A LARGE CEMENT FACTORY FOR AUSTRALIA.—A cement factory for Australian Commonwealth purposes is to be erected at Fairy Meadow, near Canberra, at an estimated cost of about $500,000. It is to have an output of 20,000 tons per annum. A deposit of limestone has already been acquired by the Commonwealth, considered to be sufficient for 75 years.

LIGHT RAILWAYS ON THE EASTERN FRONT.—On the eastern front, light railways have been used to a very large extent. Most of these lines have been improvised, and as the track is sent to the front in sections, the work of building has in many instances been extremely rapid. The extent to which these light railways are being used in the Russian campaign may be gaged from the fact that among the booty captured within the last few days by the victorious Russians no fewer than 20 miles of track were taken in the course of a single operation. Exact details are lacking regarding the transport of heavy ordnance in this way, but it may be said that even a very narrow gage light railway affords a better means of conveyance than the apologies for roads in Galicia and Poland, which during winter and spring are seas of the thickest and heaviest mud. As the light railways are not intended for high speed, heavy guns can be carried so long as the individual axle load is kept within bounds, and the distribution of the weight over a number of vehicles is just as feasible on a light railway as on a standard gage line, where heavy artillery is invariably conveyed in such a manner that the weight is spread over a number of wagons forming an articulated whole.—*Railway Gazette, London.*

ANNUAL REPORTS

BUFFALO, ROCHESTER & PITTSBURGH RAILWAY COMPANY—31ST ANNUAL REPORT

The Directors of the Buffalo, Rochester and Pittsburgh Railway Company submit to the Stockholders the following report for the year ending June 30, 1916:

ROAD OPERATED.

	1916. Miles.	1915. Miles.	Increase. Miles.
Owned	367.06	367.06	
Leased	89.90	89.90	
Trackage rights	129.52	129.52	
Total length of road operated	586.48	586.48	
Second track	208.33	208.33	
Sidings	378.14	372.71	5.43
Total miles of tracks, all steel rail	1,172.95	1,167.52	5.43

There was no change in the mileage of road operated. The tracks were increased by 5.43 miles of new sidings.

INCOME.

OPERATING INCOME:	1916.	1915.	Increase or Decrease.
Revenues	$11,971,018.75	$9,479,935.75	$2,491,083.00
Expenses	8,648,789.54	6,935,252.30	1,713,537.24
Net revenue	$3,322,229.21	$2,544,683.45	$777,545.76
Tax accruals	250,000.00	230,000.00	20,000.00
Uncollectible revenues	127.94	596.27	—468.33
	$250,127.94	$230,596.27	$19,531.67
Income	$3,072,101.27	$2,314,087.18	$758,014.09
Miscellaneous income		450.48	—450.48
Total operating income	$3,072,101.27	$2,314,537.66	$757,563.61
Non-operating income	1,016,098.72	718,195.23	297,903.49
Gross income	$4,088,199.99	$3,032,732.89	$1,055,467.10
Deductions for interest, rentals, etc.	2,124,062.88	2,120,013.33	4,049.55
Net income	$1,964,137.11	$912,719.56	$1,051,417.55
APPROPRIATIONS:			
Pension and Fire Insurance Funds	$22,923.35	$21,508.47	$1,414.88
Special appropriations	648,393.60	111,211.09	537,182.51
Total appropriations	$671,316.95	$132,719.56	$538,597.39
Surplus available for dividends.	$1,292,820.16	$780,000.00	$512,820.16
Return on capital stock	7.84%	4.73%	3.11%

Taxes advanced 8.7% to $250,000.00, due to higher assessments on real estate and increased taxes on Net Income.

The increase of $297,903.49 in Non-operating Income is attributable to the favorable balance in Hire of Equipment account.

A special appropriation of $648,393.60 was made from Net Income. Of this amount $125,000.00 was paid into the Sinking Funds under Equipment Agreements Series A, B and C, and including $2,393.60 accrued interest is available for the purchase of new rolling stock; $216,000.00 represents the cost of Equipment Bonds Series D, E and F paid off during the year, less one-half of the principal refunded by 4½% Consolidated Mortgage Bonds; $180,000.00 covers the amount paid into the Sinking Fund to retire bonds under Equipment Agreement Series G; and $125,000.00 is the principal of Series H bonds paid off during the year.

DIVIDENDS.

Dividends in cash were paid on:		1916	1915
Preferred Stock	$6,000,000 6%	$360,000 6%	$360,000
Common Stock	10,500,000 4%	420,000 4%	420,000
Total	$16,500,000	$780,000	$780,000

Since the close of the fiscal year, your Board of Directors has declared semi-annual dividends of three per cent. on the preferred stock and three per cent. on the common stock, payable August 15, 1916.

CAPITAL STOCK.

There has been no change during the year in this account. The total outstanding Capital Stock of the Company amounts to $16,500,000, and consists of $6,000,000 preferred stock and of $10,500,000 common stock.

FUNDED DEBT.

Under the terms of the Sinking Funds for the redemption of Equipment Bonds, $587,000 bonds were retired, as follows: $116,000 Series D; $115,000 Series E; $176,000 Series F, and $180,000 Series G.

Also, the second annual installment of $125,000 Series H bonds was retired, as provided for in the agreement.

The result is a decrease of $712,000 in the bonded debt of the Company outstanding on June 30, 1916, of which $626,000 was held by the public and $86,000 by the Fire Insurance and Pension Funds.

In accordance with the provisions of the Consolidated Mortgage of 1907, the Trustee delivered to the Company $204,000 Consolidated Mortgage 4½% bonds, representing 50% of Equipment Bonds Series D, E and F retired during the year. These bonds added to those in the Treasury of the Company make a total of $1,604,000 held in reserve.

COST OF ROAD.

Capital account has been charged during the year with $573,993.43 for investment in road as follows:

Land for storage warehouse, Rochester, N. Y.	$65,934.76
Other land for transportation purposes	51,968.26
Subway, Saxton St., Rochester, N. Y.	15,375.82
Increased weight of rails, frogs and fastenings	96,087.00
Stone ballast	53,015.83
Improving bridges and culverts	21,309.50
Dock, Buffalo Creek, N. Y.	42,588.79
Fire protection facilities, East Salamanca, N. Y.	15,138.71
Fire protection facilities, Du Bois, Pa.	28,545.99
Shop machinery	10,722.99
Yard extensions, sidings, etc.	173,305.78
Total	$573,993.43

The important expenditures embrace the following completed items:

Land for the new storage warehouse in Rochester, N. Y.

Dock at Buffalo Creek, N. Y., and equipment with facilities for handling pig iron and pulp wood.

Modern facilities for fire protection at the East Salamanca, N. Y., and Du Bois, Pa., shop plants.

Passing sidings, yard and industrial tracks, as business demanded.

Among the important work still in progress may be mentioned the following, referred to in last year's report:

Subway, Saxton Street, Rochester, N. Y.

Strengthening of steel bridges.

Replacing of timber bridges, trestles and culverts in permanent form.

Also the general improvement of the road with stone ballast and heavier type of rail.

COST OF EQUIPMENT.

Expenditures were made for additions to rolling stock as follows:

Two locomotive crane hoists	$17,525.30
Five cabooses built at Company's Shops	3,623.61
Steel underframes applied on nineteen hundred and eighty-four freight cars	123,943.38
Steel side stakes applied on thirteen hundred and twelve freight cars	18,522.20
Sundry other betterments, including re-classification or transfer of twenty passenger cars, one hundred and nine freight cars and two work equipment cars	141,489.03
	$305,103.52

There was credited for equipment sold, transferred or destroyed, the following book values, a part of which, less salvage, was charged to Operating Expenses, and the balance, representing the depreciation since June 30, 1907, charged to Accrued Depreciation account:

Six locomotives	$41,950.66	
Twenty-nine passenger train cars	85,212.00	
One hundred and twenty-two freight train cars	96,435.81	
Sixty-four work equipment cars	58,638.00	
		282,236.47
Making a net increase of		$22,867.05

The total tractive power of engines aggregates 11,493,536 pounds, a decrease of 133,999 pounds from last year.

The average tractive power of each engine increased 258 pounds, being 36,257 pounds as against 35,999 pounds last year.

The total carrying capacity of cars in freight service now amounts to 750,847 net tons, a decrease of 684 tons from last year.

The average carrying capacity or efficiency of each freight car increased .06 ton, being 43.25 tons as against 43.19 tons last year.

Of the cars in passenger service, 44.66 per cent. are of all steel construction, and in the freight service, 89 per cent. of the cars are now all steel or are equipped with steel underframes.

PASSENGER REVENUES.

The gross passenger revenue amounted to $1,144,892.08, an increase of 3.89 per cent., or $42,911.58.

The average rate received per passenger per mile increased .035 cent, being 2.221 cents as compared with 2.186 cents a year ago.

The average distance each passenger was carried increased .22 mile, being 27.16 miles against 26.94 miles last year.

Passengers carried in 1916	1,897,948	
Passengers carried in 1915	1,871,322	
An increase of 1.42 per cent., or		26,626
Passengers carried one mile in 1916	51,546,863	
Passengers carried one mile in 1915	50,415,391	
An increase of 2.24 per cent., or		1,131,472

FREIGHT REVENUES.

The average rate received per ton per mile decreased .13 mill, being 4.64 mills as compared with 4.77 mills last year.

The average distance each ton was hauled increased 4.40 miles, being 158.23 miles, against 153.83 miles a year ago.

The revenue tonnage moved was the largest in the history of the Company, all of the general commodities showing increases, as follows:

	1916.	1915.	Increase.
Bituminous coal	8,905,421	7,107,857	1,797,564
Coke	485,436	362,403	123,033
Iron ore	696,775	417,178	279,577
Pig and bloom iron	426,727	258,461	168,266
Other freight	3,619,529	2,782,136	837,393
Total	14,133,868	10,928,035	
An increase of 29.34 per cent., or			3,205,833
Tons moved one mile in 1916		2,236,342,672	
Tons moved one mile in 1915		1,681,022,418	
An increase of 33.03 per cent., or			555,320,254

The result for the year is a gain of 29.40 per cent., or $2,358,956.90 in gross freight revenue.

EXPENSES.

Operating Expenses increased $1,713,537.24, or 24.71 per cent., in which each primary expense account participated, as follows:

	Increase.	Per Cent.
Maintenance of way	$385,636.43	30.43
Maintenance of equipment	618,269.01	28.95
Traffic	1,072.67	.76
Transportation	675,313.33	21.48
Miscellaneous operations	623.32	4.25
General	32,622.48	14.08
Total	$1,713,537.24	24.71

This increase is due principally to the larger volume of traffic, necessitating proportionate outlays in all departments.

The expenses were further increased by the advances made in wages of employes, the higher cost of materials, and, in continuation of the policy inaugurated several years ago of strengthening certain classes of equipment, by extraodinary expenditures for rebuilding freight cars with steel underframes and bolsters and equipping them with heavy draft gear.

The amount charged this year for depreciation was $474,087.36, an increase of $49,054.85 over the preceding year.

The operating ratio decreased .91 per cent., being 72.25 per cent., against 73.16 per cent. last year.

The percentage of each group of operating expenses to operating revenues for the past five years is as follows:

	1916.	1915.	1914.	1913.	1912.
Maintenance of way	13.81	13.37	13.49	14.23	12.52
Maintenance of equipment	23.00	22.53	20.65	19.74	18.94
Traffic	1.19	1.50	1.40	1.30	1.26
Transportation	31.91	33.17	36.15	32.71	32.88
Miscellaneous operations	.13	.15	.25		
General	2.21	2.44	2.26	2.05	2.14
Total	72.25	73.16	74.20	70.03	67.74

The average cost per ton per mile is 3.28 mills, being .07 mill more than last year.

The average number of revenue tons carried one mile per revenue freight train mile, excluding the mileage of helping engines, increased 78.45 tons, being 785.61 tons, against 707.16 tons a year ago.

The average number of revenue tons carried one mile per revenue freight engine mile, including the mileage of helping engines, increased 25 tons, being 502, against 477 a year ago.

The averages for the past ten years are as follows:

Year.	Train Load.	Engine Load.
1907	543	435
1908	530	371
1909	597	400
1910	638	420
1911	635	430
1912	647	439
1913	710	462
1914	694	454
1915	707	477
1916	786	502

The average number of revenue passengers carried one mile per revenue passenger train mile is 38, being 1 more than last year.

The non-revenue traffic, not included in any of the other figures of this report, is as follows:

	1916.	1915.
Number of passengers	340,607	275,504
Number of passenger carried one mile	13,811,735	11,522,375
Number of tons	1,155,202	867,023
Number of tons carried one mile	106,701,505	83,299,093

FIRE INSURANCE FUND.

The assets of this fund were increased $16,216.96 during the year, and now amounts to $300,192.46 in interest-bearing securities and cash.

PENSION FUND.

The assets of this fund, created July 1, 1903, were increased $17,120.79 during the year, and now amount to $224,320.41 in interest-bearing securities and cash.

There were sixty-five pensioners upon the roll on June 30, 1916, a net increase of four during the year.

GENERAL REMARKS.

The Ontario Car Ferry Company, Limited, paid a dividend of 5% for the year ending December 31, 1915. The sum of $12,485.00 received on the $249,700.00 of this Company's stock was credited to Non-operating Income Account.

The second boat, referred to in last year's report, was delivered and placed in service October 1, 1915. Its cost amounting to $457,718.58, was met from the available funds of the Ferry Company and the proceeds of $225,000.00 short term 6% notes.

Under date of August 30, 1915, the Director of Valuation of the Interstate Commerce Commission served notice that the valuation of this Company's property and subsidiary and leased lines would be made as of July 1, 1917, and in consequence forces have been engaged in the preliminary work required by the Commission, increasing the valuation expense accordingly. The amount expended to date for this work has reached $21,132.83.

In accordance with the terms of the Agreement with the Erie Railroad Company, dated May 1, 1907, trackage rights for a further period of ten years were granted over your line from Clarion Junction, Pa., to Eleanora Junction, Pa., a distance of 49.93 miles.

The acknowledgments of the Board are renewed to the officers and employees for their faithful and efficient services.

By order of the Board.

WILLIAM T. NOONAN,
President.

Rochester, N. Y., July 31, 1916.

PROFIT AND LOSS ACCOUNT.

June 30th, 1916.

CREDIT.

Balance Surplus, June 30, 1915		$3,420,984.94
Credit Balance, transferred from Income Account (page —)		512,820.16
Unrefundable overcharges		1,564.78
Miscellaneous Credits—		
Adjustment of old accounts	$32,183.64	
Unclaimed wages, etc.	1,235.37	
Discounts on funded debt retired	2,575.25	
Unreleased premiums on funded debt retired.	3.63	
Withdrawn from Pension Fund	1,336.76	
Miscellaneous credits	1.00	
		37,335.65
Total		$3,972,705.53

DEBIT.

Premium on funded debt retired	$4,440.25	
Loss on retired road	2,476.30	
Miscellaneous Debits—		
Adjustment of old accounts	$13.80	
Abandoned surveys	21.17	
	34.97	
Total		6,951.52
By Balance Surplus, June 30, 1916		$3,965,754.01

COMPARATIVE INCOME ACCOUNT.

OPERATING REVENUES.

Freight—	1916.	1915.	Increase or Decrease.
Coal	$6,417,975.38	$5,040,100.92	$1,377,874.46
Coke	442,139.78	318,637.93	123,501.85
Merchandise	3,521,531.86	2,663,951.27	857,580.59
Total	$10,381,647.02	$8,022,690.12	$2,358,956.90
Passenger	1,144,892.08	1,101,980.50	42,911.58

OTHER TRANSPORTATION—			
Excess baggage	9,092.17	9,907.05	—814.88
Parlor and chair car	11,534.10	10,983.75	550.35
Mail	53,092.65	52,956.47	136.18
Express	100,000.00	100,237.62	—237.62
Other passenger train	4,190.97	5,128.79	—937.82
Milk	22,102.06	21,352.80	749.26
Switching	115,462.00	88,437.02	27,024.98
Special service	1,715.62	.....	1,715.62
Total	$317,189.57	$289,003.50	$28,186.07
INCIDENTAL—			
Dining and buffet	11,370.75	9,755.03	1,615.72
Station, train and boat privileges	4,254.16	4,066.17	187.99
Demurrage	36,845.00	10,439.55	26,405.45
Ganson St. Docks	69,032.10	38,251.00	30,781.10
Sundry sources	5,788.07	3,749.88	2,038.19
Total	$127,290.08	$66,261.63	$61,028.45
TOTAL OPERATING REVENUES	$11,971,018.75	$9,479,935.75	$2,491,083.00

OPERATING EXPENSES.

Maintenance of way and structures	$1,652,890.37	$1,267,253.94	$385,636.43
Maintenance of equipment	2,753,623.19	2,135,354.18	618,269.01
Traffic	142,839.43	141,766.76	1,072.67
Transportation	3,819,911.25	3,144,597.92	675,313.33
Miscellaneous operations	15,281.57	14,658.25	623.32
General	264,243.73	231,621.25	32,622.48
TOTAL OPERATING EXPENSES	$8,648,789.54	$6,935,252.30	$1,713,537.24
NET OPERATING REVENUE	$3,322,229.21	$2,544,683.45	$777,545.76
TAX ACCRUALS	250,000.00	230,000.00	20,000.00
UNCOLLECTIBLE REVENUES	127.94	596.27	—468.33
OPERATING INCOME	$3,072,101.27	$2,314,087.18	$758,014.09
MISCELLANEOUS OPERATING INCOME	.....	$450.48	—$450.48
NON-OPERATING INCOME—			
Hire of freight cars	$757,069.87	446,058.22	311,011.65
Rent from other rolling stock	16,353.42	11,131.46	5,221.96
Rents—Joint facilities	151,387.70	156,280.94	—4,893.24
" —Miscellaneous	14,199.78	11,175.15	3,024.63
Dividends on stocks owned	12,485.00	12,485.00	.....
Income from securities, loans and accounts	57,010.27	71,972.89	—14,962.62
Release of premium on funded debt	7,320.08	9,018.57	—1,698.49
Miscellaneous	272.60	73.00	199.60
TOTAL NON-OPERATING INCOME	$1,016,098.72	$718,195.23	$297,903.49
GROSS INCOME	$4,088,199.99	$3,032,732.89	$1,055,467.10

DEDUCTIONS FROM GROSS INCOME.

RENTS—FOR LEASED ROADS—			
Allegheny & Western Railway	$272,000.00	$272,000.00	.....
Clearfield & Mahoning Railway	86,500.00	86,500.00	.....
Mahoning Valley Railroad	15,000.00	15,000.00	.....
	$373,500.00	$373,500.00	.....
For rolling stock other than freight cars	974.24	707.42	$266.82
Joint facilities	314,086.54	289,917.11	24,169.43
Miscellaneous	17,032.00	16,898.70	133.30
Total rents	$705,592.78	$681,023.23	$24,569.55
INTEREST ON FUNDED DEBT—			
First Mortgage Bonds—Roch. & Pitts. Rd.	78,000.00	78,000.00	.....
Consol. Mort. Bonds—Roch. & Pitts. Rd.	235,200.00	235,200.00	.....
General Mort. Bonds—B., R. & P. Ry.	221,350.00	221,350.00	.....
Consol. Mort. Bonds—B., R. & P. Ry.	437,040.00	431,177.50	5,862.50
First Mort. Bonds—L., P. & C. Rd.	17,500.00	17,500.00	.....
Equipment Agreements	423,087.37	454,350.49	—31,263.12
Total	$1,412,177.37	$1,437,577.99	—$25,400.62
INTEREST ON UNFUNDED DEBT	3,396.72	1,412.11	1,984.61
Miscellaneous	2,896.01	.....	2,896.01
TOTAL DEDUCTIONS FROM GROSS INCOME	$2,124,062.88	$2,120,013.33	$4,049.55
NET INCOME	$1,964,137.11	$912,719.56	$1,051,417.55

DISPOSITION OF NET INCOME.

APPROPRIATIONS—			
Pension Fund	$9,691.51	$9,459.45	$232.06
Insurance Fund	13,231.84	12,049.02	1,182.82
New Equipment	127,393.60	65,413.83	61,979.77
Retirement of Equipment bonds	521,000.00	45,797.26	475,202.74
DIVIDENDS—			
PREFERRED STOCK—			
(No. 44) 3% on $6,000,000, payable Aug. 15, 1915	180,000.00	180,000.00	
(No. 45) 3% on $6,000,000, payable Feb. 15, 1916	180,000.00	180,000.00	
COMMON STOCK—			
(No. 31) 2% on $10,500,000, payable Aug. 15, 1916	210,000.00	210,000.00	
(No. 32) 2% on $10,500,000, payable Feb. 15, 1916	210,000.00	210,000.00	
Total Appropriation of Income	$1,451,316.95	$912,719.56	$538,597.39
INCOME BALANCE TRANSFERRED TO PROFIT AND LOSS	$512,820.16	.....	$512,820.16

STATISTICS.

	1916.	1915.	1914.	1913.	1912.	1911.
TRAIN MILEAGE.						
Mileage of revenue passenger trains	1,343,973	1,343,611	1,366,584	1,378,199	1,317,794	1,269,744
Mileage of revenue mixed trains	33,042	32,920	38,400	36,944	28,796	34,724
Mileage of revenue freight trains	2,824,173	2,344,221	2,816,276	2,836,626	2,603,712	2,470,974
Mileage of revenue special trains	483	.....	607	227	62	1,303
Total mileage of revenue trains	4,201,671	3,720,752	4,221,867	4,251,996	3,950,364	3,776,745
Mileage of non-revenue trains	205,613	127,219	288,366	304,703	212,102	267,319
Grand total train mileage	4,407,284	3,847,971	4,510,233	4,556,699	4,162,466	4,044,064
CAR MILEAGE.						
Mileage of passenger train cars	4,645,987	4,543,012	4,878,143	4,802,546	4,704,937	4,358,824
Mileage of loaded freight cars	61,218,725	47,444,553	55,399,960	58,953,427	51,373,857	48,662,123
Mileage of empty freight cars	40,804,806	33,562,944	36,955,115	36,873,190	35,575,498	33,464,206
Mileage of caboose cars	2,809,963	2,334,314	2,795,467	2,848,046	2,609,481	2,449,629
Total mileage of freight train cars	104,833,494	83,341,811	95,150,542	98,674,663	89,558,836	84,575,958
AVERAGES.						
Number of cars in passenger trains	3	3	3	3	3	3
Number of passengers per train mile	38	37	40	39	38	40
Number of loaded cars in freight trains	21.50	19.96	19.41	20.52	19.52	19.42
Number of empty cars in freight trains (including caboose cars)	15.32	15.10	13.92	13.82	14.50	14.33
Number of cars in freight trains	36.82	35.06	33.33	34.34	34.02	33.75
Number of tons of freight per train mile	785.61	707.16	693.60	710.04	647.41	634.69
Number of tons of freight per loaded car	36.53	35.43	35.74	34.61	33.17	32.68
Percentage of loaded cars in freight trains	58.39	56.93	58.24	59.76	57.35	57.54

LEHIGH VALLEY RAILROAD COMPANY—SIXTY-SECOND ANNUAL REPORT

PHILADELPHIA, August 1, 1916.

To the Stockholders of the
LEHIGH VALLEY RAILROAD COMPANY.

The Board of Directors herewith submit the annual report of the business and condition of your Company for the fiscal year ended June 30, 1916.

MILEAGE

The first track mileage owned or controlled and operated by the Lehigh Valley Railroad Company, the main line of which is double track, extending from Jersey City, N. J., to Buffalo and Suspension Bridge, N. Y., is as follows:—

	Miles
Lehigh Valley Railroad Company	316.71
Controlled by ownership of entire capital stock	938.28
Controlled by ownership of majority of capital stock and lease	115.37
Operated under lease	27.63
Total mileage operated (owned or controlled)	1,397.99
Trackage rights over railroads owned by other companies	45.82
Total first track mileage	1,443.81

In addition to the above there are 596.47 miles, or 41.31 per cent., of second track, 99.51 miles of third track, 44.84 miles of fourth track and 1,270.19 miles of yard tracks and sidings, a total of 3,454.82 miles of track in operation at the close of the year. A detailed statement of track mileage is shown on pages 47 to 49. The average number of miles of railway operated for the year was 1,443.69, upon which the mileage statistics in certain tables submitted in this report are based.

The total increase of 57.49 track miles compared with the preceding year is due almost entirely to the construction of additional yard tracks and sidings to take care of increased business.

OPERATING REVENUES AND EXPENSES

The following statement sets forth the total revenues and expenses and net revenue from operation for the fiscal year, compared with similar figures for the fiscal year 1915. The complete income account appears on page 24.

OPERATING REVENUES

From	1916	1915	Increase or Decrease
Coal freight	$18,811,099.51	$19,195,755.50	—$384,655.99
Merchandise freight	20,363,250.65	16,005,501.45	4,357,749.20
Passenger	4,300,182.81	4,043,799.00	256,383.81
Mail	194,214.71	195,124.81	—910.10
Express	673,962.09	449,622.82	224,339.27
Other transportation	2,231,881.61	2,022,230.85	209,650.76
Incidental	807,978.10	613,927.59	194,050.51
Total operating revenues	$47,382,569.48	$42,525,962.02	$4,856,607.46

OPERATING EXPENSES

	1916	1915	Increase or Decrease
Maintenance of way and structures	$4,657,854.14	$4,483,924.72	$173,929.42
Maintenance of equipment	9,364,628.69	8,207,491.18	1,157,137.51
Traffic expenses	996,249.39	959,830.08	36,419.31
Transportation expenses	17,090,113.67	15,382,186.83	1,707,926.84
General expenses	984,131.72	913,954.73	70,176.99
Total operating expenses	$33,092,977.61	$29,947,387.54	$3,145,590.07
NET OPERATING REVENUE	$14,289,591.87	$12,578,574.48	$1,711,017.39
Ratio of operating expenses to operating revenues	69.84%	70.42%	—.58%

OPERATING REVENUES

COAL FREIGHT

The revenue derived from the transportation of coal and coke amounted to $18,811,099.51, a decrease of $384,655.99, or 2.00 per cent., as compared with the preceding twelve months. This decrease is due to the reduced revenue received from transportation of anthracite coal because of the lower rates ordered by the Interstate Commerce Commission effective April 1, 1916, and a decreased tonnage of that commodity as a result of the unsettled labor situation in the anthracite region during negotiations for a new contract between the miners and the operating coal companies.

The percentage of coal freight revenue to total operating revenues was 39.70 per cent., a decrease of 5.44 per cent.

The coal and coke transported, excluding the Company's supply coal, was 17,418,333 tons, an increase of 523,403 tons, or 3.10 per cent.

This class of tonnage was 52.58 per cent. of the total tonnage hauled during the year, a decrease of 3.24 per cent.

MERCHANDISE FREIGHT

The transportation of merchandise freight produced a revenue of $20,363,250.65, an increase of $4,357,749.20, or 27.23 per cent., as compared with the preceding year.

The revenue derived from the transportation of merchandise freight was 42.98 per cent. of the total operating revenues, an increase of 5.34 per cent.

The tonnage moved, excluding Company's material, was 15,706,852 tons, an increase of 17.45 per cent.

GENERAL FREIGHT

The total revenue derived from both coal and merchandise freight was $39,174,350.16, an increase of $3,973,093.21, or 11.29 per cent., as compared with the preceding twelve months.

The entire freight traffic amounted to 33,125,185 tons, an increase of 2,856,484 tons, or 9.44 per cent.

The number of tons carried one mile was 5,990,465,278, an increase of 664,136,376 ton miles, or 12.47 per cent.

The average haul was 180.84 miles, an increase of 4.87 miles, or 2.77 per cent.

The average revenue per ton was 118.262 cents, as compared with 116.296 cents last year, an increase of 1.966 cents, or 1.69 per cent.

Company's freight, not included in the above, amounted to 3,223,604 tons, an increase of 149,944 tons, or 4.88 per cent.

The total freight train mileage was 9,381,833 miles, an increase of 457,485 miles, or 5.13 per cent.

The revenue received per freight train mile was $4.18, an increase of $0.24, or 6.09 per cent.

The average trainload of revenue freight was 638.52 tons, an increase of 41.69 tons, or 6.99 per cent. Including Company's freight, the average trainload was 660.87 tons, an increase of 42.02 tons, or 6.79 per cent.

PASSENGER

The earnings received from passenger traffic amounted to $4,300,182.81, an increase of $256,383.81, or 6.34 per cent., compared with the preceding year.

The total number of passengers carried was 6,745,086, an increase of 1,538,114, or 29.54 per cent.

The number of passengers carried one mile increased 12,605,714, or 5.84 per cent.

The average distance traveled by each passenger was 33.84 miles, a decrease of 7.58 miles, or 18.30 per cent.

The average revenue per passenger was 63.753 cents, a decrease of 13.908 cents, or 17.91 per cent.

The average revenue per passenger per mile was 1.884 cents, an increase of .009 cent, or .48 per cent.

Passenger train mileage was 4,258,978, an increase of 34,791 miles, or .82 per cent., as compared with an increase in this revenue of 6.34 per cent.

The average revenue from passengers per passenger train mile was 100.97 cents, an increase of 5.24 cents, or 5.47 per cent.

MAIL

The sum of $194,214.71 was received from the Federal Government for the transportation of United States mail, a decrease of $910.10.

EXPRESS

The revenue from this class of business amounted to $673,962.09, an increase of $224,339.27.

OTHER TRANSPORTATION

The earnings derived from transportation other than shown under the preceding headings were $2,231,881.61, an increase of $209,650.76.

INCIDENTAL

Incidental revenue amounted to $807,978.10, an increase of $194,050.51.

OPERATING EXPENSES

MAINTENANCE OF WAY AND STRUCTURES

The sum of $4,657,854.14 was expended for the maintenance of way and structures, an increase of $173,929.42, or 3.88 per cent., as compared with the preceding year.

During the year sixteen steel bridges and thirteen concrete-steel bridges, replacing light iron or wooden bridges, were constructed. One new iron and one new wooden bridge were placed under new sidings to industrial plants and one iron bridge was built replacing a pipe culvert. One iron and six wooden bridges were replaced by pipe culverts and seven iron bridges were strengthened. Seven wooden bridges were replaced by ballasted floor creosoted timber bridges and two wooden bridges were abandoned and openings filled. One wooden bridge was replaced by a reinforced concrete box culvert and one new wooden lift bridge with pile trestle approach was built in connection with additional yard facilities.

2,037 tons of 136-pound rail, 1,608 tons of 110-pound rail, 10,311 tons of 100-pound rail and 11 tons of 90-pound rail, together with necessary frogs, switches, etc., were placed in the track.

1,040,219 tie plates and 151,969 anti-rail creepers were used.

1,079,157 cross ties, 2,360,231 feet B. M. switch ties, 1,343,407 feet B. M. bridge ties and lumber amounting to 4,096,998 feet B. M. were used.

663,683 of the cross ties, 1,700,293 feet B. M. of switch ties and 1,309,457 feet B. M. of bridge ties were treated with creosote.

96,120 cubic yards of crushed stone were used in ballasting track. 65,527 feet of drain tile were placed in the roadbed.

746.30 miles of copper and 238.15 miles of iron wire were used in extending and renewing the telephone, telegraph and signal wires on the system.

MAINTENANCE OF EQUIPMENT

The expenditures for the maintenance of equipment amounted to $9,364,628.69, an increase of $1,157,137.51, or 14.10 per cent., as compared with the preceding twelve months. Included therein is a charge of $1,446,123.02 for the depreciation of equipment, as required by the accounting rules of the Interstate Commerce Commission.

Twenty-eight worn-out locomotives, one passenger car, one express car, one fruit car, 1,551 freight equipment cars and 161 road service cars were condemned and either sold or destroyed during the year and their value written off the books by appropriate charges through operating expenses.

Five passenger cars, fourteen express cars, two fruit cars, two combined passenger and baggage cars and two cafe cars were converted into workmen's cars. 193 produce cars were converted into ice cars. Three locomotive tenders were converted into water cars and together with 101 freight equipment cars were transferred to road service.

Thirty-two locomotives have been equipped with additional air pumps and eighty-nine with bull's-eye lubricators, to meet the requirements of the Interstate Commerce Commission.

In addition to the above, thirty-one locomotives were equipped with brick arches and stokers, thirteen with brick arches only and twenty-six with straight air.

Seventy-one locomotives had new fire boxes applied, one hundred and thirty-four locomotives were equipped with new cylinders and seventy-one locomotives had new boilers applied.

321 passenger equipment cars were painted and varnished and eleven equipped with electric lighting apparatus. Two dining cars were equipped with steel underframes.

Steel underframes were applied to 535 wooden freight and coal cars, making a total of 15,193 cars so equipped during the last eight years. Five 8-wheel cabooses were equipped with steel underframes. 2,982 wooden freight cars were equipped with metal draft arms. 4,970 freight equipment cars and 117 road service cars were equipped with safety appliances to conform to the requirements of the Interstate Commerce Commission.

GENERAL BALANCE SHEET, JUNE 30, 1916

Dr. ASSETS			Cr. LIABILITIES		
INVESTMENT IN ROAD AND EQUIPMENT:—			CAPITAL STOCK:—		
Investment in road	$24,713,339.85	.....	1,210,034 shares common stock, par $50	$60,501,700.00	.....
Investment in equipment	56,587,605.78	.....	2,126 shares preferred stock, par $50	106,300.00	.....
	$81,300,945.63				$60,608,000.00
Less reserve for accrued depreciation	9,437,840.57		FUNDED DEBT:—		
		$71,863,105.06	Mortgage bonds	$89,336,000.00	.....
INVESTMENT IN MISCELLANEOUS PHYSICAL PROPERTY		2,030,270.66	Collateral trust bonds	10,000,000.00	.....
INVESTMENTS IN AFFILIATED COMPANIES:—			Equipment trust obligations	4,400,000.00	.....
Stocks	$46,082,986.52	.....	Mortgage on real estate	1,669.18	.....
Bonds	32,745,926.00	.....		$103,737,669.18	.....
Notes	3,190,086.05	.....	Less securities held in treasury of the Company	18,706,000.00	.....
Advances	200,474.65	.....			85,031,669.18
		82,219,473.22	CURRENT LIABILITIES:—		
OTHER INVESTMENTS:—			Traffic and car-service balances payable	$457,921.39	.....
Stocks	$259,869.00	.....	Audited accounts and wages payable	4,595,329.66	.....
Bonds	34,000.00	.....	Miscellaneous accounts payable	239,172.86	.....
Miscellaneous	307,279.00	.....	Interest matured unpaid	403,365.00	.....
		601,148.00	Dividends matured unpaid	6,791.00	.....
CURRENT ASSETS:—			Funded debt matured unpaid	17,000.00	.....
Cash	$15,126,594.94	.....	Unmatured dividends declared	1,515,200.00	.....
Net balance receivable from agents and conductors	1,694,305.37	.....	Unmatured interest accrued	615,745.97	.....
Miscellaneous accounts receivable	1,522,844.62	.....	Unmatured rents accrued	350,806.01	.....
Material and supplies	3,371,895.07	.....	Other current liabilities	644,301.97	.....
Interest and dividends receivable	220,361.17	.....			8,845,633.86
Other current assets	261,361.85	.....	DEFERRED LIABILITIES		1,568,280.04
		22,197,363.02	UNADJUSTED CREDITS:—		
DEFERRED ASSETS		1,536,524.52	Tax liability	$503,367.20	.....
UNADJUSTED DEBITS:—			Other unadjusted credits	1,554,077.02	.....
Rents and insurance premiums paid in advance	$146,727.52	.....			2,057,444.22
Other unadjusted debits	1,478,278.23	.....	PROFIT AND LOSS		23,961,862.93
		1,625,005.75			
TOTAL ASSETS		$182,072,890.23	TOTAL LIABILITIES		$182,072,890.23

THE LEHIGH VALLEY COAL COMPANY

REPORT OF OPERATIONS

PHILADELPHIA, August 4, 1916.

The annual report of the operations conducted by The Lehigh Valley Coal Company for the fiscal year ended June 30, 1916, and statements indicating its financial condition at the close of the year, are herewith submitted.

The total net income of the Company from all sources, after deducting charges for royalties, sinking funds, depreciation of the property and interest on the funded debt, amounted to $1,094,922.41, an increase of $72,107.50, as compared with the preceding year. While the results generally may be considered satisfactory, the net revenues have nevertheless been somewhat curtailed by the unusual labor conditions which existed throughout the year, there having been a general shortage in the number of men necessary to properly conduct the operations, and the very substantial increases in the prices of all materials and supplies, particularly powder and steel.

The production of anthracite coal from the lands owned and leased by your Company, including that mined by tenants, was 8,103,187 gross tons, an increase of 14,286 tons as compared with the preceding year.

The percentage of sizes above pea produced by the mining operations of the Company was 65.60 per cent., an increase of .19 per cent.

The number of breaker hours worked was 45,693, an increase of 3,608 hours.

The bituminous coal mined from the Snow Shoe lands, located in Centre County, Pennsylvania, amounted to 261,004 gross tons, an increase of 2,799 tons.

The property of the Company was fully maintained during the year and $274,544 was expended for additions and betterments.

Negotiations for a new wage agreement were conducted between the miners and the producing companies extending over a period of about six weeks, during which time the miners generally remained at work. The matter was finally concluded by granting the men an eight hour working day and a substantial increase in wages, the agreement to run for a period of four years from April 1, 1916.

An underground electric haulage system was installed at William A. Colliery, for the purpose of conveying coal in mine cars from the workings to the breaker. This arrangement has proven much more satisfactory than the old method of dumping the coal into railroad cars.

The alterations to Packer No. 4 Colliery and the concentration of the underground pumping at that point, referred to in the preceding annual report, have been completed, and a gunboat hoist is being installed to permit of more efficient handling of coal between the mines and the breaker.

Development work preparatory to mining coal from the Broadwell lands is now under way, the prospecting done on that property having indicated that there is sufficient coal there to justify the same.

The provings on the bituminous coal land at Snow Shoe, Centre County, Pennsylvania, are progressing favorably. The introduction of electric power for hauling, pumping and the coal cutting machines, which was recently completed, will make it possible to produce an increased tonnage with much greater efficiency.

The operations at Prospect Colliery were seriously handicapped in December, 1915, as a result of an extensive cave-in at the abandoned workings of the Hillman Colliery, which carried with it the bed of Mill Creek. In order to restore conditions to normal, it was necessary to relocate the stream by means of large flumes and to fill in an immense cave, all of which was satisfactorily accomplished.

Under date of December 7, 1915, the Company leased the coal under the Pettebone property, which contains about 470 acres, between Maltby and Westmoreland Collieries.

By virtue of an Act of the Pennsylvania State Legislature, approved June 2, 1915, and effective on and after January 1, 1916, known as the "Workmen's Compensation Act," the Company is required to compensate all employees injured, and the families of all employees killed, while in service. To carry out the spirit of this law, the Company has organized a very extensive Compensation and Welfare Department for the work connected with the compilation and distribution of the compensation and for the care of the injured. This Department includes a large staff of surgeons, nurses and others, whose services are rendered without expense to the employees.

The Roney Act, under which a special tax of two and one-half per cent of the value of coal mined was levied by the State of Pennsylvania, mention of which was made in the preceding annual report, has been declared unconstitutional. The amount collected from customers on account of this tax either has been refunded or is in process of adjustment. A new law, known as the Dawson Act, requiring the payment of a similar tax, became effective June 1, 1915, and it is expected that the constitutionality of this law will also be tested in the courts.

No new capital obligations were issued during the year. In fact, the funded debt of the Company was reduced by the purchase and cancellation through the sinking fund of $204,000 Delano Land Company First Mortgage Five Per Cent Bonds.

Payments amounting to $114,282 were made to the sinking funds of the various mortgages on the Company's property.

The increase in the item "Property and Plant" is due in the main to the purchase of additional property, including the land on which the Calumet Coal Storage Plant, South Chicago, is located, and to improvements to existing property.

Current Assets are $4,301,002 in excess of Current Liabilities.

The books and accounts of the Company have been verified by certified public accountants, and a copy of their certificate as to the correctness thereof appears in the report.

F. M. CHASE,
Vice President and General Manager.

GENERAL BALANCE SHEET, JUNE 30, 1916

Dr. ASSETS			
PROPERTY AND PLANT			$25,943,880.41
SECURITIES OWNED			200,000.00
ADVANCES FOR COAL MINING RIGHTS			4,378,968.50
SINKING FUNDS IN HANDS OF TRUSTEES			2,600,387.26
INSURANCE FUND			144,531.98
CURRENT ASSETS:—			
Cash	$4,491,004.57	.....	
Materials and supplies	407,756.36	.....	
Notes receivable	4,000.00	.....	
Due from individuals and companies	1,889,101.97	.....	
			6,791,862.90
DEFERRED AND SUSPENDED ASSETS			422,812.08
TOTAL ASSETS			$40,482,443.13
LIABILITIES			Cr.
CAPITAL STOCK			$1,965,000.00
FUNDED DEBT			19,688,000.00
CURRENT LIABILITIES:—			
Audited vouchers	$630,071.62	.....	
Wages due and unpaid	570,755.69	.....	
Due to individuals and companies	108,153.40	.....	
Royalties on coal mined, due lessors	30,106.64	.....	
Interest on funded debt, due July 1, 1916	298,700.00	.....	
Interest on funded debt, accrued, not due	100,000.00	.....	
Interest due on funded debt, unclaimed	2,705.00	.....	
Taxes due and accrued	750,368.71	.....	
			2,490,861.06
DEFERRED AND SUSPENDED LIABILITIES:—			
Deferred real estate payments	$500,000.00	.....	
Miscellaneous	551,480.01	.....	
			1,051,480.01
RESERVE ACCOUNTS:—			
Depreciation and other reserves			9,292,215.66
PROFIT AND LOSS			5,994,886.40
TOTAL LIABILITIES			$40,482,443.13